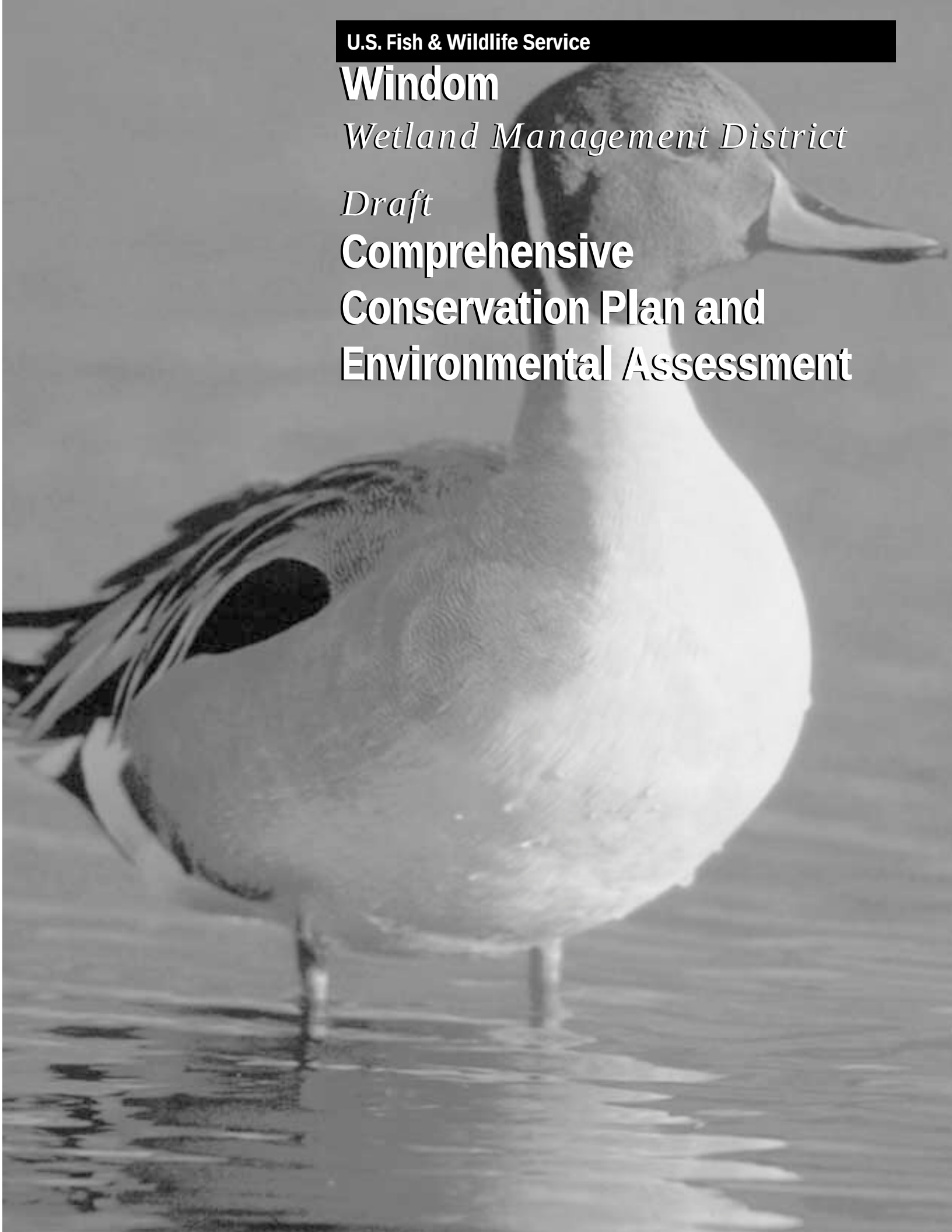
U.S. Fish & Wildlife Service

Windom

Wetland Management District

Draft

Comprehensive Conservation Plan and Environmental Assessment



Comprehensive Conservation Plans provide long-term guidance for management decisions; set forth goals, objectives and strategies needed to accomplish refuge purposes; and, identify the Fish and Wildlife Service's best estimate of future needs. These plans detail program planning levels that are sometimes substantially above current budget allocations and, as such, are primarily for Service strategic planning and program prioritization purposes. The plans do not constitute a commitment for staffing increases, operational and maintenance increases, or funding for future land acquisition.

Windom

Wetland Mangement District

Comprehensive Conservation Plan Approval
U.S. Fish and Wildlife Service, Region 3

Submitted by:

Steve Kallin — Date
WMD Manager

Concur:

Don Hultman
Refuge Supervisor (RFS 3) — Date

Nita M. Fuller — Date
Regional Chief
National Wildlife Refuge System

Approve:

William F. Hartwig — Date
Regional Director

Acknowledgments

Many organizations, agencies and individuals provided invaluable assistance with the preparation of this Comprehensive Conservation Plan. We gratefully acknowledge the input and support of Tom Larson, Mike Marxen, John Schomaker, Mary Mitchell, Sean Killen, and Jane Hodgins, Planners with the Division of Ascertainment and Planning and all of the dedicated employees of the Wetland Management Districts of the U.S. Fish and Wildlife Service.

Region 3 of the U.S. Fish and Wildlife Service is grateful to the many conservation organizations active in western Minnesota for their dedication to the Wetland Management Districts in making them outstanding examples of cooperation and partnership with the many local communities. The Region is equally grateful to every volunteer who contributes time to the programs offered on the Wetland Management Districts. You are truly the backbone of conservation efforts.

Contents

Appendices

List of Figures:

Executive Summary

Windom Wetland Management District is part of a unique natural ecosystem and an equally unique legacy of human partnership.

The ecosystem is known as the tallgrass prairie ecosystem, and its combination of prairie grasslands and small wetlands made it among the most biologically diverse and intricate landscapes in the world. When European settlers arrived and discovered the land's tremendous productivity, the tallgrass prairie ecosystem became one of the most altered ecosystems on earth. The landscape changed rapidly, and little of the original prairie was saved. Today only fragments exist in small, isolated blocks.

USFWS Photo

Partnerships have been inherent in efforts to preserve the remaining prairie. From the Duck Stamp Act of 1934 to the Wetland Loan Act of 1961 to the Small Wetland Acquisition Program of 1962, the U.S. Fish and Wildlife Service (Service) and hunters, environmentalists and communities have worked together to preserve land and wildlife. Funding for acquisition of Waterfowl Production Areas (WPA) comes in large part from funds generated through the Duck Stamp Act, making duck hunters a key partner in preserving critical habitat within the prairie pothole region. Waterfowl Production Areas are upland grasslands and wetlands purchased by the Service to provide nesting habitat for waterfowl and hunting areas for waterfowl and upland game hunters. Wetland Management Districts (WMD) are the federal administrative units charged with acquiring, overseeing and managing WPAs and easements within a specified group of counties.

Windom WMD is part of this heritage. Established in 1990, the Windom WMD encompasses 12 southwestern Minnesota counties. It includes 59 WPAs covering 11,444 acres of fee title lands, 34 wetland/flowage easements covering 1,463 acres, eight Habitat Easements totaling 384 acres and nine FmHA Conservation Easements on land formerly on the inventory of the Farmers Home Administration.

Managing the District demands long range planning that reflects vision, science and people. This Draft Comprehensive Conservation Plan describes how we intend to improve wildlife habitat, foster waterfowl production, and expand opportunities for compatible recreation, including hunting, wildlife observation, and environmental education.

The management direction identified in this Draft Comprehensive Conservation Plan charts a course for the next 15 years. This course is summarized in three broad categories – Wildlife and Habitat, People, and Operations.

Comprehensive Conservation Planning

The Comprehensive Conservation Plan, or CCP, is a guide for management on the Windom WMD over the next 15 years. The document provides an outline for how we will accomplish our mission and make our vision become a reality. Several legislative mandates within the National Wildlife Refuge System Improvement Act of 1997 have guided the development of the Plan. These mandates include:

- The focus of management on the Districts is to benefit wildlife conservation.
- Wildlife-dependent recreation activities, (hunting, fishing, wildlife observation, wildlife photography, environmental education and interpretation) are encouraged when they are compatible with wildlife conservation.

The CCP will benefit management of the Windom WMD by:

- Providing a clear statement of direction for future management of the Districts.
- Giving District neighbors, visitors and the general public an understanding of the Service's management actions on and around the Districts.
- Ensuring that the Districts' management actions and programs are consistent with the mandates of the National Wildlife Refuge System.
- Ensuring that District management is consistent with federal, state and county plans.
- Wildlife-dependent recreation involving compatible hunting, fishing, wildlife observation and photography, or environmental education and interpretation, are the priority public uses of the Refuge System.
- Other uses have lower priority on the refuge system and are only allowed if they are compatible with the mission of the Refuge System, and with the purposes of the individual refuge.
- Providing a basis for the development of budget requests on the District's operation, maintenance, and capital improvement needs.

The Planning Process

The planning process for this Comprehensive Conservation Plan began October 1, 1997, when a Notice Of Intent to prepare a comprehensive management plan was published in the Federal Register. Initially, members of the planning team identified a list of issues and concerns that were likely to be associated with the management of the Refuge. These preliminary issues and concerns were based on the team members' knowledge of the area, contacts with citizens in the community, and ideas already expressed to the Refuge staff. Refuge staff and Service planners then began asking Refuge neighbors, organizations, local government units, schools and interested citizens to share their thoughts in a series of open house events.

Open houses were conducted at each District as well as the Regional Office at Ft. Snelling, Minnesota.

People were invited to send in written comments describing their support or concerns about the Districts. Fifty-one written comments were received.

Vision Statement for the Minnesota Wetland Management Districts

The Districts will emphasize waterfowl production and ensure the preservation of habitat for migratory birds, threatened and endangered native species, and resident wildlife. The Districts will provide opportunities for the public to hunt, fish, observe and photograph wildlife and increase public understanding and appreciation of the Northern Tallgrass Prairie Ecosystem.

A survey of public use was conducted and focus group meetings were conducted to develop the issues, goals, and objectives for the Plan. These meetings included the District Managers and invited participants from the University of Minnesota, The Nature Conservancy, and the U.S. Geological Survey, Northern Prairie Wildlife Research Center. Concurrent with the focus group meetings, planning staff met with individual Districts numerous times to review issues and discuss District management.

A wide range of issues, concerns and opportunities were expressed during the planning process. Numerous discussions among Refuge and planning staff, focus groups and resource specialists brought to light several recurring themes. Issues fall into broad categories of wildlife, habitat and people. Dealing with these issues is at the core of the development of goals and objectives for the management of the Minnesota Wetland Management Districts.

Management Alternatives

An environmental assessment (EA) encompassing all six of the Minnesota Wetland Management Districts was prepared as part of the planning process. Three management alternatives were evaluated in the EA, including: maintaining management of current wetland management district acres but not acquiring more land; increasing land holdings to meet the goal acres and maintain current management practices; and improve WMDs for waterfowl and other trust species. The Service has selected the third alternative, improve the Districts for waterfowl and other trust species, as the preferred alternative. Each alternative is briefly described in the following paragraphs.

Alternatives Development

Project Leaders on WMDs within the major waterfowl breeding habitats of the United States have been charged with the responsibility to identify tracts of land that meet the goals of the Small Wetland Acquisition Program (SWAP) for inclusion in the National Wildlife Refuge System (NWRS). Of all the responsibilities Project Leaders carry, identifying lands to include in the NWRS has the longest lasting implications and is by far the most important. The land, once acquired, needs to be managed intensively with a variety of tools available to the managers. The intensity of management is limited by the number of staff available and the scattered distribution of the land holdings across a wide landscape in 28 counties of western Minnesota. The following alternatives identify three approaches meeting the goals and responsibilities of land ownership and management.

The main goal of the SWAP has been, and still is, to purchase a complex of wetlands and uplands that provide habitat in which waterfowl can successfully reproduce. The basic concept has been to purchase in fee title key brood marshes that include adequate nesting cover on adjacent uplands while protecting under easement surrounding temporary and seasonal wetland basins as breeding pair habitat. Once this is accomplished the land must be managed through seeding with native grasses and forbs, burning, and spraying for exotic and/or invasive vegetation and insects, and dispose abandoned buildings and wells. In addition, the areas must be fenced, signed and made accessible to the public.

The SWAP began in 1958 and accelerated rapidly in the early 1960s with passage of the Wetlands Loan Act. The original 1960s delineations were prepared for each fee title parcel based on their suitability to provide brood rearing habitat for waterfowl. These delineations designated wetlands as priority A, B, and C for fee title purchase. These tracts had few upland acres and only existing wetlands with no drainage facilities were considered for fee or easement purchase. In some locations, these original delineations have been reevaluated and revised. In Minnesota, a 1974 exercise produced maps showing proposed boundaries of each fee title delineation, as well as wetlands within a 2-mile radius that were eligible for easement purchase. A 1984 effort produced maps of "significant wetland areas" for fee title purchase. Although dated, these efforts were biologically sound and provide valuable information in deciding which properties to purchase today.

USFWS Photograph

Over the years our understanding of breeding waterfowl biology has increased and the landscape of the Upper Midwest has changed dramatically. The SWAP itself has evolved to include purchase of drained wetlands, increased upland acreage, and grassland easements along with new counties that include lands within intensely agricultural and urbanized landscapes.

Three possible alternatives to acquisition and management were considered as we thought about the future of the programs for the wetland management districts. The three alternatives were (1) manage what lands we currently own; (2) acquire additional lands and manage them as we currently manage the lands that we own; and (3) acquire additional lands and expand management beyond the present level of intensity.

In the following sections we summarize what we would do under each alternative. More detail is provided in Chapter 2 of the EA (Appendix N of this document). The third alternative is our preferred alternative, which is developed in more detail as the Comprehensive Conservation Plan.

Alternative 1 – Maintain Management on Current Acres With No Additional Land Acquisition

Under this alternative we would manage fee title land already in the system and would not increase the holdings to the agreed goal acres for each county within the District. We would restore native grasslands using local ecotypes of mixed native grasses and forbs and improve wetlands by increasing water control and improving watersheds. We would regularly evaluate our approach to waterfowl

production. We would maintain the recruitment rate of waterfowl and the current level of inspection of our lands and easements. We would continue to conduct the 4-square-mile monitoring program and the monitoring of nesting structures under this alternative. We would continue routine surveys such as the scent post survey and bird counts and non-routine surveys when requested, such as the deformed frog survey. We would continue to avoid any actions that would harm endangered or threatened species, and we would note the presence of any species that is federally listed as endangered or threatened.

USFWS File Photograph

We would maintain the public access to WPAs that currently exists. We would complete and document development plans for every WPA on the District as time and staffing permit. The development plans would be recorded in a geographic information system and document ownership boundaries, habitat, facilities and history of management.

Each District would continue with the current level of staffing. We would identify and replace facilities and equipment that do not meet Service standards. We would expect that the maintenance backlog would be reduced, but not eliminated, over the life of the CCP.

Management would continue to be inconsistent among Districts. There would be limited coordination with the Districts in Iowa, Wisconsin, and the Dakotas.

Alternative 2 – Increase Land Holdings to Goal Acres and Maintain Current Management Practices (Current Management)

Under this alternative we would continue acquiring land up to the goal acres agreed to by each county within the District (See Table A). We would expand the size of WPAs in areas of prime waterfowl use through easements and working with partners.

We would restore native grasslands using local ecotypes of mixed native grasses and forbs and improve wetlands by increasing water control and improving watersheds. We would regularly evaluate our approach to waterfowl production. We would maintain the recruitment rate of waterfowl and the current level of inspection of our lands and easements. We would continue to conduct the 4-square-mile monitoring program and the monitoring of nesting structures under this alternative. We would continue routine surveys such as the scent post survey and bird counts and non-routine surveys when requested, such as the deformed frog survey. We would continue to avoid any actions that would harm endangered or threatened species. We would note the presence of any species that is federally listed as endangered or threatened.

We would continue current public access on existing areas and add access to new acquisitions slowly over several years. We would complete and document development plans for every WPA on the District as time and staffing permit. The development plans would be recorded in a geographic information system and document ownership boundaries, habitat, facilities and history of management.

Each District would continue with the current level of staffing. We would identify and replace facilities and equipment that do not meet Service standards. We would expect that the maintenance backlog would be reduced, but not eliminated, over the life of the CCP.

Management would continue to be inconsistent among Districts. There would be limited coordination with the Districts in Iowa, Wisconsin, and the Dakotas.

Alternative 3 – Increase Land Holdings to Goal Acres and Expand Management for Waterfowl, Other Trust Species and the Public. (Preferred Alternative)

Under this alternative we would continue acquiring land up to the goal acres agreed to by each county within the District (See Table A). We would expand the size of WPAs in areas of prime waterfowl use through easements and working with partners. We would focus whenever possible on prime habitat as outlined in the Habitat and Population Evaluation Team (HAPET) "thunderstorm" maps. These maps reveal high density waterfowl populations and, because the results are color coded, look somewhat like weather maps.

We would follow the Strategic Growth of the SWAP Guidelines for Fee and Easement Purchase (See Appendix L). These Guidelines specify that:

1) The program will focus on providing the mission components for the WMD landscape: wetland complexes, surrounding grasslands and a predator component that approaches a naturally occurring complement (i.e., coyotes vs. red fox).

2) The program will focus on established delineation criteria (size, location, ratio of upland to wetlands, soil composition, etc.) for all fee title, habitat and wetland easements (Appendix L).

3) The program will prioritize acquisition based on thunderstorm maps, land cover (grassland acres), landscape characteristics and data on predator populations. Prioritization will be given to tracts that benefit waterfowl, but other wildlife benefits will be considered in the priorities such as native prairie, endangered or threatened species, colonial nesting birds and expanding and protecting large tracts of grassland as Grassland Bird Core Conservation Areas as proposed by Fitzgerald et al. (1998).

Photo by Bernie Angus

We would restore native grasslands using local ecotypes of mixed native grasses and forbs and improve wetlands by increasing water control and improving watersheds. We would, where possible, follow HAPET recommendations for nesting platforms and predator management (electric fencing, predator control, islands, etc). Cooperating landowners within the District's watershed would be offered incentives and/or compensated through cost-sharing agreements for applying conservation and environmental farming practices on their lands and for creating, maintaining, or enhancing habitat for wildlife.

We would regularly evaluate our approach to waterfowl production and improve waterfowl monitoring. We would increase the recruitment rate of waterfowl and

Table A: Fee Title Acres Approved and Goal Acres Per District in Accordance with the Land Exchange Board

Wetland Management Districts	Fee Title Acres Approved for Purchase by the Land Exchange Board	Goal Acres	Remainder
Detroit Lakes	40,585	98,280	48,695
Fergus Falls	42,671	74,6675	32,004
Litchfield	32,828	76,220	43,392
Big Stone	2,329	0	0
Morris	49,780	74,830	25,050
Windom	12,074	24,476	14,927

increase inspection of our lands and easements. We would work to prohibit the introduction of wildlife species that are not native to the Northern Tallgrass Prairie Ecosystem.

We would employ a scientifically defensible means to monitor and evaluate habitats and populations under this alternative. We would increasingly use geographic information systems in our monitoring. We would inventory the hydrological systems within the Districts, invertebrate communities, and monitor contaminant levels in water flowing into District wetlands. We would increase our surveys and monitoring of threatened and endangered species, invertebrates, and unique communities under this alternative. We would seek opportunities to enhance and reintroduce native species in the districts.

Under this alternative we would expand and improve opportunities for public use through construction of additional parking lots and interpretive kiosks on existing and acquired lands.

USFWS Photo

We would complete and document development plans for every WPA on the District within three years under this alternative. The development plans would be recorded in a geographic information system and document ownership boundaries, habitat, facilities and history of management.

Staff would be added to the Districts under this alternative. Implementation of the CCP would rely on partnerships formed with landowners in the watershed, volunteers and interested citizens, farm and conservation organizations, and with appropriate government agencies. We would identify and replace facilities and equipment that do not meet Service standards. Our goal would be to meet the standards by 2010.

Management of the Districts would be more consistent among the Minnesota Districts and with the Districts in Iowa, Wisconsin and the Dakotas.

Planning Issues and Management Direction

A wide range of issues, concerns and opportunities were expressed during the planning process. Numerous discussions among Refuge and planning staff, focus

groups and resource specialists brought to light several recurring themes. Issues fall into broad categories of wildlife, habitat and people. In the following paragraphs, we list the issues that were identified in this planning process and our objectives for addressing that issue.

Wildlife and Habitat

Can we improve waterfowl productivity?
We will work to increase waterfowl production through effective monitoring of populations, evaluating current management actions, increasing recruitment through cropland conversion to grassland, use of artificial structures where appropriate, and protecting existing National Wildlife Refuge System lands as well as other waterfowl habitats in cooperation with District partners.

Strategic Acquisition: Can we buy the highest priority land in the most efficient and cost-effective manner possible?

We will ensure strategic land acquisition by evaluating current acquisition guidelines, identifying priority acquisition areas, and evaluating acreage goals while securing rapid responses to sellers through close coordination with the acquisition office.

Managing Uplands: Can we improve prairie restoration by planting the right seeds, using the right management tools?

We will seek to reestablish and manage native plant communities by seeding a diverse mixture of local grasses and forbs each year as determined through the development of a grassland management plan dictating the location, use of fire, grazing, and haying as viable management tools.

USFWS Photo

Managing and Restoring Wetlands: How do we manage wetlands to maintain or increase productivity?

We will strive to restore and manage wetlands primarily within identified priority areas, increasing the amount and quality of water level management, monitoring hydrological systems, and encouraging and cooperating in research of these systems.

Can we improve biological inventories and monitoring on WPAs?

We will improve biological inventories and monitoring through planning, training, expanded species data gathering, research, and utilization of Geographic Information Systems (GIS). The District will increase the use of biological data when making management decisions.

Can we stem the loss of migratory birds in the Northern Tallgrass Prairie Ecosystem?

We will try to stem the loss of all migratory birds by expanding restoration of upland wetland and riparian habitats on private lands and developing or manag-

ing one or more wetlands in each county or priority area exclusively for webless migratory birds.

Can we manage District land to preserve, restore and enhance threatened and endangered species, rare and declining species, and address regional priority species?

We will preserve, restore and enhance threatened and endangered species and rare and declining species through the collection of baseline population and habitat data, tailored management activities, enforcement of regulations and cooperation with partners.

Under what circumstances should we reintroduce rare native species to District land?

We will seek to reintroduce rare native species where feasible by identifying, evaluating and prioritizing opportunities as well as implementing reintroduction programs in close cooperation with the Minnesota Department of Natural Resources.

How do we mitigate negative external influences such as contaminants on WPAs and reduce its impact on long-term health and productivity of District land?

We will work to mitigate negative external influences on Service lands by identifying, monitoring and developing action plans to address threats such as pesticide use, contaminants, soil erosion and poor water quality.

How do we balance management for Federal trust species with the needs of resident species?

We will balance management of Federal trust species with the needs of resident species by cooperating with state wildlife agencies and local conservation organizations to provide compatible food and cover sources where there are documented needs.

USFWS Photo

How do we reduce crop loss caused by Canada geese foraging on private land adjacent to WPAs?

We will work to reduce crop loss caused by Canada Geese foraging on private lands adjacent to Waterfowl Production Areas by developing a Memorandum of Understanding with the Minnesota Department of Natural Resources which defines agency responsibilities to provide alternate feeding areas and long-term solutions.

Invasive species, both exotic and native, are negatively impacting the natural ecological balance of grasslands and wetlands on WPAs.

We will seek to control the negative impacts of invasive species by taking aggressive control measures against exotic plants, documenting and eradicating invasive plant populations, and increasing long-term resolution of these problems through biological controls.

What is the Long Range Goal of the Partners for Fish and Wildlife Program (Private Lands) be on Wetland Management Districts?

We will identify the long-range goals of the District's Partners for Fish and Wildlife Program (private lands) by developing priority action items that could include identification of partners in key project areas, and developing a brochure for the public to better define the Partners program and its benefits.

People

USFWS Photo

There are conflicting views concerning the costs and benefits of federally owned land in a community. Who benefits? Who pays?

We will identify the benefits and costs of Federally owned land to a community by investigating the economic value of wetlands and federal land ownership as well as revenue sharing in relation to local taxes. We will seek to determine the social values of wildlife and natural habitats to people.

How do we provide adequate facilities and programs for the public to fully enjoy wildlife-related recreation in a way that is compatible with our main mission?

We will provide adequate facilities and programs for public enjoyment of compatible wildlife-related recreation by enhancing public use experiences with accessible facilities that meet National Visitor Service Standards as well as providing current maps and District information. We will increase environmental education opportunities through additional "hands-on" exhibits, specific on-site interpretative opportunities, and building volunteer programs to establish a District Friends Group.

Operations

Districts need sufficient staff in critical areas to fully meet resource challenges and opportunities.

We will meet staffing needs for resource challenges and opportunities by hiring additional administrative, biological, technical and maintenance personnel.

Districts need office, maintenance, and equipment storage facilities to carry out their mission.

We will provide adequate maintenance and storage facilities by selecting and developing a secure maintenance and equipment storage area within the boundaries of the Wetland District.

Vehicles and other necessary equipment need to be replaced on a regular basis according to Service standards.

We will schedule vehicle and equipment replacements to achieve industry standards when normal life expectancy is reached and acquire all adequate equipment to achieve Wetland Management District Goals.

Funding is needed to develop and manage newly acquired WPA land and facilities.

We will develop newly acquired Waterfowl Production Areas by identifying these needs, securing funding and carrying out projects immediately after lands are purchased. We will identify the costs of new lands to the District's annual operation and maintenance budget.

We will maintain existing waterfowl production areas at Service standards including boundary posting, nature trails, parking lots, access trails, water control structures and fences by maintaining a current inventory of maintenance needs on the Maintenance Management System database, and we will update these costs and priorities annually.

USFWS Photo

Individual WPA development plans and record keeping need to be updated.

We will ensure that Waterfowl Production Area Development Plans are current by performing complete resource inventories and utilizing the most current Geographic Information System technology and complete unit planning to meet trust responsibilities.

The Districts need to be consistent in their application of policy and resource protection efforts.

We will seek consistency in policy and practices on all Service Wetland Management Districts by attending coordination meetings and following Service policy when implementing programs.

Essential Staffing, Mission-Critical Projects and Major Maintenance Needs

The Service relies on two systems to track the needs of the Wetland Management Districts and other units of the National Wildlife Refuge System. These systems are the Refuge Operating Needs System and the Maintenance Management System. Each station has scores of projects in each system, representing a need which is often beyond the realities of funding. However, each station has identified its most critical needs which form a realistic assessment of funding needed to meet many of the goals, objectives, and strategies identified in the CCP. These needs also form the basis for the President's budget request to Congress. These critical needs are listed below in the categories of essential staff, mission-critical projects, and major maintenance projects. A complete listing of projects in the Operating Needs System is found in Appendix G of this document and it represents the long-term needs of the Windom WMD to operate at optimum levels.

Essential Staffing Needs

Assistant Manager
Assistant Manager

Wildlife Biologist
Biological Technician
Administrative Technician
Visitor Services Specialist

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Mission-Critical Projects
Provide Visitor Services with Displays for the New Visitor Center
Wetland Restoration
Native Prairie Habitat Restoration

Major Maintenance Projects
Replace shop Building
Replace WPA Boundary Fences
7 Additional Projects

Total Funding Needs: $2,001,000

Where You Can Find the CCP

The complete comprehensive conservation plan is available for review at each Wetland Management District office and at local libraries in Odessa, Fergus Falls, Detroit Lakes, Morris, Litchfield and Windom.. The Draft CCPs for each District are also available on the Service's planning web site: http://midwest.fws.gov/planning/wmdtop.htm

How You Can Be Involved

Public participation is the cornerstone of comprehensive conservation planning. By letting us know what you think of the draft comprehensive conservation plans, you can help the Service develop plans that accomplish conservation goals and fulfill the needs of people visiting Minnesota Wetland Management Districts.

A public review period follows the release of the comprehensive conservation plan and this summary. Comments will continue to be welcome throughout the planning process, however in order for your thoughts to be considered in preparation of the final CCP, we need to receive your comment by September 13, 2002.

Written comments can be submitted either through the mail or electronically through our Web site (http://midwest.fws.gov/planning/wmdtop.htm). Please address written correspondence to:

U.S. Fish & Wildlife Service
Windom WMD
Attention: CCP Comment
49663 County Road 17
Windom, MN 56101

Chapter 1: Introduction and Background

Overview: History of Refuge Establishment, Acquisition, and Management

The Wetland Management Districts of Minnesota are set in a landscape that was once a mosaic of prairie and wetlands. From north to south the land varied between woodland, sandy ridges and hills covered by prairie flowers, dotted with small, blue wetlands and oak savannah. It was beautiful, rolling country teaming with waterfowl and other wildlife. Early explorers from Europe described its park-like quality with wonder. The combination of prairie grasslands and small wetlands made it among the most biologically productive landscapes in the world; supporting many people and an abundance of wildlife.

U.S. Fish & Wildlife Service Photo

The prairie harbored bison herds estimated at 50 to 60 million. From Alexander Henry's January 14, 1801, journal reporting for the Red River Valley, "...At daybreak I was awakened by the bellowing of buffaloes...I dressed and climbed my oak for a better view. I had seen almost incredible numbers of buffalo in the fall, but nothing in comparison to what I now beheld. The ground was covered at every point of the compass, as far as the eye could reach, and every animal was in motion."

Only 100 years after this entry, the myth of the prairies' unlimited abundance was severely tested. Many important game species were driven to near extinction by intensive and uncontrolled killing and commercial over-harvest encouraged by East Coast and European markets. Free-roaming bison, the Great Plains wolf, swift fox, pronghorn antelope and grizzly bear were eliminated from Minnesota. Black bear and elk were removed from their prairie niche. Many Native American tribes that depended on these resources were decimated by disease and conflict.

When European settlers arrived on the prairies, they recognized the land's productivity and rapidly turned it to agriculture. In a few decades it ranked among the richest agricultural land in the world. The landscape changed so rapidly, little of the original prairie was saved. Today, only fragments remain in isolated, small blocks. With fragmentation and the loss of large predators, smaller predators such as raccoon, striped skunks and fox increased, much to the detriment of ground-nesting birds and other native grassland species.

Perhaps no other ecosystem on earth as been so dramatically altered, in such a short time, as the tallgrass prairie ecosystem of the Midwest.

The early mission of the Fish and Wildlife Service was to protect species from over-harvest and manage wildlife for a quality hunt. Waterfowl have been a central focus from the very beginning. Many species of prairie waterfowl and shorebirds were saved by legislation formed to protect them from market hunting.

Early surveys of the Prairie Pothole Region revealed a strong correlation between prairie wetlands and waterfowl breeding habitat. Biologists learned that waterfowl success is directly linked to the number of wetlands. When winter snows fill the small wetlands, waterfowl populations soar. Since the wetlands are shallow by nature, their value to waterfowl varies from year to year depending on the amount of snow and rain. In years of drought, wetlands dry and waterfowl populations plummet. The crucial link between wetlands and waterfowl was made during a time when wetlands throughout the prairies were being drained at an unprecedented rate for agriculture.

In 1934 the Duck Stamp Act was passed, setting the stage for the most aggressive land acquisition campaign for conservation of wildlife habitat in American history. Although the original Act did not allow purchase of small wetlands, it created a way for hunters to actively participate in maintaining waterfowl populations. In 1958 the Act was amended, making it possible for the Service to buy small wetlands and uplands for breeding waterfowl and for hunting. The acquired wetlands became Waterfowl Production Areas (WPAs) and formed the core of the Wetland Management Districts.

The Act was passed in the nick of time. Between 1780 and 1980 approximately 42 percent of Minnesota wetlands were drained. Between 1974 and 1980, an estimated 16.8 percent of the remaining seasonal, semi-permanent and permanent wetlands were lost. Today over 70,000 miles of ditches drain wetlands in Minnesota with a continuing annual wetland loss of 2.4 percent per year.

Photo Copyright Jan Eldridge

At the time the Small Wetland Acquisition Program (SWAP) began in 1962, the U.S. Fish and Wildlife Service entered into a Procedural Agreement with the State of Minnesota. This document laid out the rules for the purchase of wetlands as required by the Wetland Loan Act of 1961. The agreement was amended in 1976 when the number of counties authorized for acquisition increased from 19 to 28, and the goal acreage was increased. In 1991, the Minnesota Land Exchange Board gave the Service approval to expand its land acquisition program to all 87 counties of the state. The state goal of 231,000 acres in fee title and 365,170 acres in easements, as established in 1976, remains unchanged (See Appendix A for a complete listing of the District legal mandates).

In western Minnesota, as of March 31 1999, the Service owned 171,863 acres, of which 56,693 acres were wetlands (Figure 1). In addition, the Service administers perpetual easement agreements on 266,171 acres, of which 62,098 acres are wetlands. Wetlands that were once drained have been restored; on Waterfowl Production Areas, 4 ,064 wetland restorations have impounded 15,900 wetland acres.

The program has been remarkably successful in the face of great odds. The Wetland Management Districts combine to form a greater land mass than the largest national wildlife refuge in the lower 48 states. Each District has, on average, 23,400 to 73,400 breeding ducks each year; all Districts combined average 240,600 breeding ducks each year (Figure 2).

Figure 1: Minnesota Wetland Management Districts

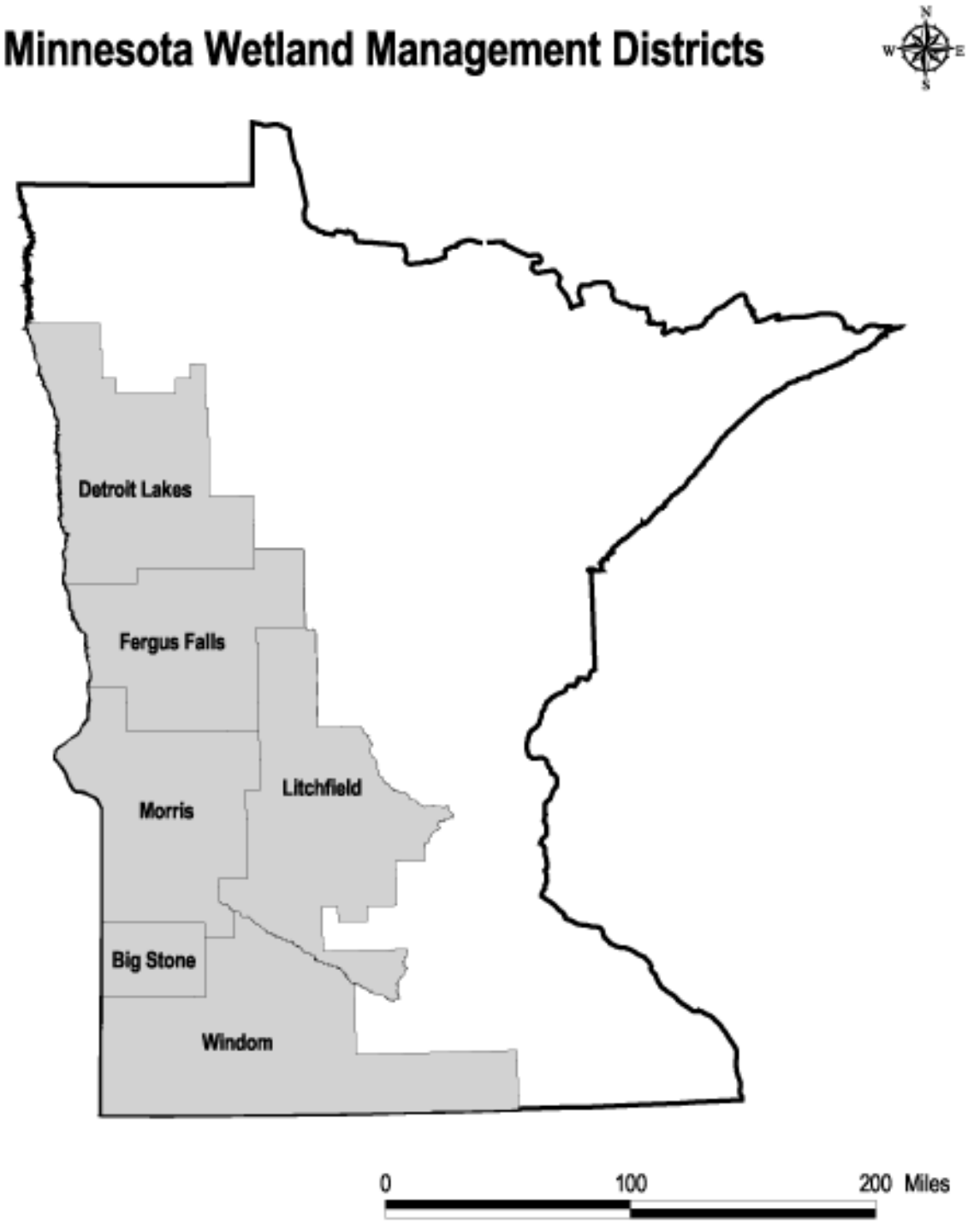
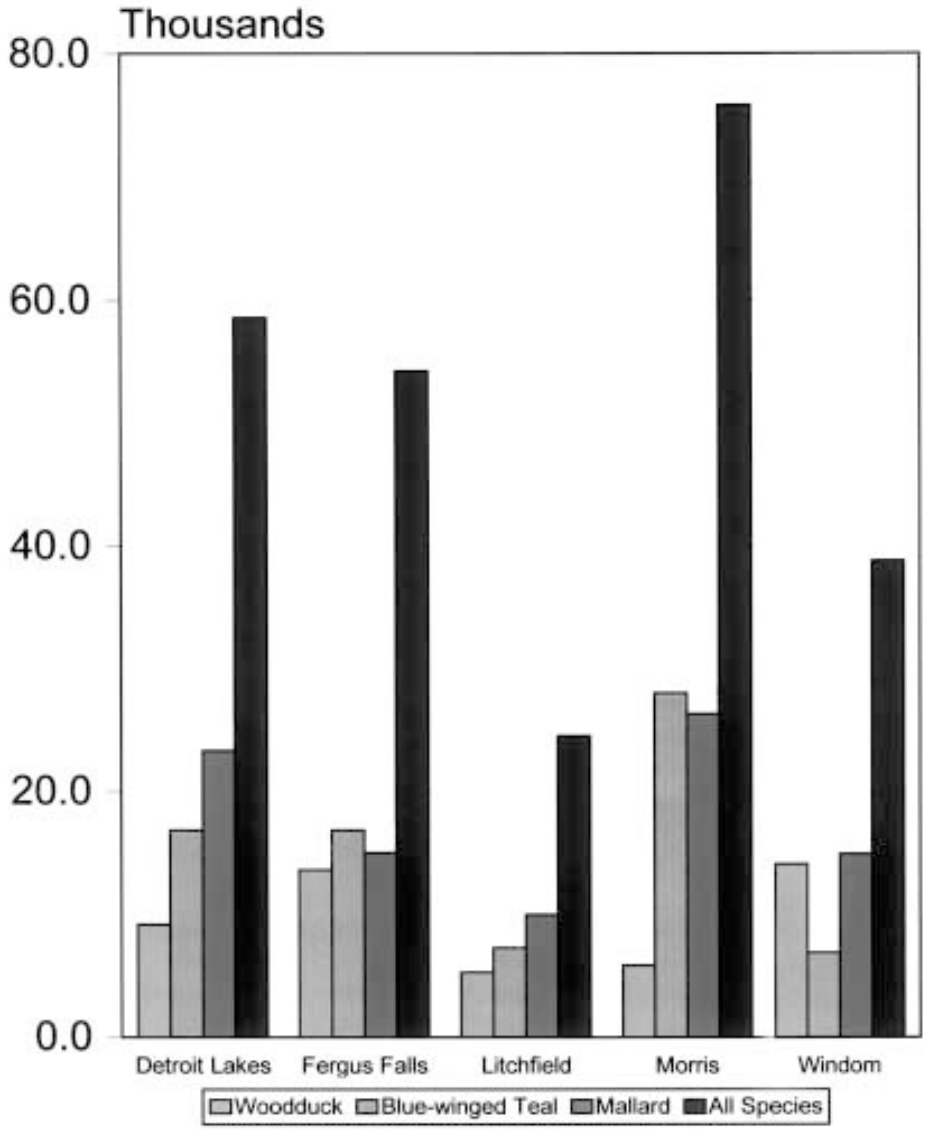


Figure 2: Breeding Pair Population (averaged) for Major Duck Species in Minnesota Wetland Management Districts 1987-2000



Data values are for 13 species (mallard, gadwall, blue-winged teal, northern shoveler, northern pintail, wigeon, green-winged teal, wood duck, redhead, canvasback, scaup, ringneck and ruddy duck).

Litchfield, Roseau and Windom wetland management districts data are for the years 1989-2000.

Source: Waterfowl Breeding Populations and Production Estimates, for the Prairie Pothole Region of Minnesota (4 square mile survey). Habitat and Population Evaluation Team, U.S. Fish and Wildlife Service, Fergus Falls, Minnesota

Background

Purpose and Need for the Comprehensive Conservation Plan

This Comprehensive Conservation Plan, or CCP, is a guide for management on the Wetland Management Districts over the next 15 years. The document provides an outline for how we will accomplish our mission and make our vision become a reality. Several legislative mandates within the National Wildlife Refuge System Improvement Act of 1997 have guided the development of the Plan. These mandates include:

- The focus of management on the Districts is to benefit wildlife conservation.
- Wildlife-dependent recreation activities, (hunting, fishing, wildlife observation, wildlife photography, environmental education and interpretation) are encouraged when they are compatible with wildlife conservation.

This CCP will benefit management of Wetland Management Districts by:

- Providing a clear statement of direction for future management of the Districts.
- Giving District neighbors, visitors and the general public an understanding of the Service's management actions on and around the Districts.
- Ensuring that the Districts' management actions and programs are consistent with the mandates of the National Wildlife Refuge System.
- Ensuring that District management is consistent with federal, state and county plans.
- Wildlife-dependent recreation involving compatible hunting, fishing, wildlife observation and photography, or environmental education and interpretation, are the priority public uses of the Refuge System.
- Other uses have lower priority on the refuge system and are only allowed if they are compatible with the mission of the Refuge System, and with the purposes of the individual refuge.
- Providing a basis for the development of budget requests on the District's operation, maintenance, and capital improvement needs.

The U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service as we know it today has evolved and changed with the country's use of natural resources and the growing respect for the environment. Today the Service is the primary Federal agency responsible for conserving, protecting, and enhancing fish and wildlife and their habitats for the continuing benefit of the American people.

Specific responsibilities include enforcing Federal wildlife laws, managing migratory bird populations, restoring nationally significant fisheries, administering the Endangered Species Act, and restoring wildlife habitat such as wetlands. The Service also manages the National Wildlife Refuge System.

The National Wildlife Refuge System

The National Wildlife Refuge System is a significant focus of the Service. Founded in 1903 by President Theodore Roosevelt with the designation of Pelican Island as a refuge for brown pelicans, the National Wildlife Refuge System is the world's largest collection of lands specifically managed for fish and wildlife. The System is a diverse network of more than 500 national wildlife refuges encompassing more than 92 million acres of public land and water. Most of the land - 86 percent - is in Alaska, with approximately 15 million acres spread across the lower 48 states and several island territories. Refuges provide habitat for more than 5,000 species of birds, mammals, fish and insects.

Like Pelican Island, many early national wildlife refuges were created for herons, egrets and other water birds. Others were set aside for large mammals like elk and bison. By far the most refuges have been created to protect migratory waterfowl. This is a result of the United States' responsibilities under international treaties for migratory bird conservation as well as other legislation, such as the Migratory Bird Conservation Act of 1929. A map of the National Wildlife Refuge System shows refuges dotting the four major flyways that waterfowl follow from their northern nesting grounds to southern wintering areas.

National wildlife refuges also play a vital role in preserving endangered and threatened species. Among the refuges that are well known for providing habitat for endangered species are Aransas National Wildlife Refuge in Texas, the winter home of the whooping crane; the Florida Panther Refuge, which protects one of the nation's most endangered mammals; and the Hawaiian Islands Refuge, home of the Laysan duck, Hawaiian monk seal and many other unique species.

Refuges also provide unique opportunities for people. When it is compatible with wildlife and habitat needs, refuges can be used for wildlife-dependent activities such as hunting, fishing, hiking, wildlife observation, photography, environmental education and environmental interpretation. Many refuges have visitor centers, wildlife trails, automobile tours, and environmental education programs. Nationwide, more than 33 million people visited national wildlife refuges in 1999.

The National Wildlife Refuge System Improvement Act of 1997 established many mandates aimed at making the management of national wildlife refuges more cohesive. The preparation of Comprehensive Conservation Plans is one of those mandates. The legislation requires the Secretary of the Interior to ensure that the mission of the National Wildlife Refuge System and purposes of the individual refuges are carried out. It also requires the Secretary to maintain the biological integrity, diversity and environmental health of the refuge system.

Minnesota Wetland Management Districts Vision Statement

The Districts will emphasize waterfowl production and ensure the preservation of habitat for migratory birds, threatened and endangered native species, and resident wildlife. The Districts will provide opportunities for the public to hunt, fish, observe and photograph wildlife and increase public understanding and appreciation of the Northern Tallgrass Prairie Ecosystem.

Legal and Policy Guidance

Waterfowl Production Units within the Fergus Falls Wetland Management District are acquired under the establishing authority of the Migratory Bird Hunting Stamp Act (Duck Stamp Act) as amended (16 U.S.C. 718-718h).

"The Secretary of the Interior is authorized to utilize funds made available under subsection (b) of this section for the purposes of such subsection, and such other funds as may be appropriated for the purposes of such subsection, or of this subsection, to acquire, or defray the expense incident to the acquisition by gift, devise, lease, purchase or exchange of, small wetland and pothole areas, interests therein, and rights of way to provide access thereto. Such small areas, to be designated as " Waterfowl Production Areas" may be acquired without regard to the limitations and requirements of the Migratory Bird Conservation Act, but all the provisions of such Act which govern the administration and protection of lands acquired thereunder, except the inviolate sanctuary provisions of such Act, shall be applicable to areas acquired pursuant to this subsection."

In addition to the Fergus Falls Wetland Management District's establishing authority legislation and the National Wildlife Refuge Improvement Act of 1997, several Federal laws, executive orders and regulations govern its administration. See Appendix A for a list of the guiding laws and orders.

Existing Partnerships: The Ecosystem Approach

The Service initiated its Ecosystem Approach in March of 1994. The primary goal of the Ecosystem Approach is conserving natural biological diversity and ecosystem integrity while supporting a sustainable level of human use. Nationally, the Service divided the country into 53 ecosystems based upon watersheds. Ecosystem teams, which include project leaders within each of the ecosystem boundaries, are the primary forum through which the Service implements the Ecosystem Approach.

The Service has set new standards for teamwork, creativity, flexibility, and communication between and among our operational units and with all partners within the ecosystem. The Service participates in public and private partnerships at many levels. Since many of the species under our care do not respect state and national borders, we also have a role within the larger ecosystem of the Western Hemisphere via such treaties as the Migratory Bird Treaty with our neighbors in Mexico and Canada.

In Minnesota, Wetland Management Districts fall within three organized ecosystem efforts, namely the Northern Tallgrass Prairie Habitat Protection Area, the Mississippi Headwaters/Tallgrass Prairie Ecosystem, and the Prairie Pothole Joint Venture of the North American Waterfowl Management Plan. The District programs are compatible with the goals and objectives of these major projects as well as the plan objectives for the Partners in Flight, and the U.S. Shorebird Conservation Plan.

Migratory Bird Conservation Initiatives

Wetland Management Districts participate in several ongoing migratory bird conservation initiatives. The North American Waterfowl Management Plan (NAWMP) is a partnership effort to restore waterfowl populations to historic levels. It was devel-

oped in 1986, with objectives and strategies evolving through NAWMP Updates. Districts strive to achieve waterfowl objectives outlined in Joint Venture Implementation Plans. The Wetland Management Districts of Western Minnesota fall within the Prairie Pothole Joint Venture.

Several other bird initiatives have been developed in recent years. Partners In Flight (PIF) deals primarily with landbirds and has developed Bird Conservation Plans for numerous physiographic areas across the U.S. These plans include priority species lists, associated habitats, and management strategies. Districts strive to implement the conservation strategies outlined in these plans to the extent possible.

The U.S. Shorebird Conservation Plan and the North American Waterbird Conservation Plan have regional components that identify priority species and conservation strategies, mostly focused around habitat, that will address the needs of these groups of birds.

All migratory bird conservation programs will be integrated under the umbrella of the North American Bird Conservation Initiative (NABCI). This is a continental effort to have all bird initiatives operate under common Bird Conservation Regions and to consider the conservation objectives of all birds together to optimize the effectiveness of management strategies. The goal of NABCI is to facilitate the delivery of the full spectrum of bird conservation through regionally-based, biologically-driven, landscape-oriented partnerships.

Photo Copyright by Jan Eldridge

Working With Partners

The Wetland Management Districts are composed of small parcels of land throughout western Minnesota. The effectiveness of this habitat for wildlife is enhanced when located near other protected areas. Land in programs such as The Nature Conservancy, Minnesota Department of Natural Resources, and set-asides such as the Conservation Reserve Program (CRP) and Reinvest in Minnesota (RIM) can add to "effective habitat size."

The Districts can not solve the problems posed by habitat fragmentation and contamination on its own and will work to increase "effective habitat size" by combining efforts with many partners, such as The Nature Conservancy, Ducks Unlimited, Minnesota Department of Natural Resources, as well as in programs such as CRP and RIM.

Chapter 2: Planning Process, Issues and Goals

Description of Planning Process

The planning process for this Comprehensive Conservation Plan began October 1, 1997, when a Notice Of Intent to prepare a comprehensive management plan was published in the Federal Register (Vol 62: 51482). Initially, members of the planning team identified a list of issues and concerns that were likely to be associated with the management of the Refuge. These preliminary issues and concerns were based on the team members' knowledge of the area, contacts with citizens in the community, and ideas already expressed to the Refuge staff. Refuge staff and Service planners then began asking Refuge neighbors, organizations, local government units, schools and interested citizens to share their thoughts in a series of open house events.

Open houses were conducted on the following schedule:

November 17, 1997 – Detroit Lakes Wetland Management District, 7 attended
November 18, 1997 – Fergus Falls Wetland Management District, 9 attended
November 19, 1997 – Morris Wetland Management District, 9 attended
November 20, 1997 – Litchfield Wetland Management District, 1 attended
November 25, 1997 – Windom Wetland Management District, 15 attended
February 4, 1998 – Regional Office, Twin Cities, 62 attended

Photo Copyright by Jan Eldridge

People were also invited to send in written comments describing their support or concerns about the Districts. Fifty-one written comments were received.

A survey of public use on the Wetland Management Districts was conducted through contract with Dr. Dorothy Anderson, University of Minnesota. Forty individuals, all regular users of the Wetland Management Districts, were invited to participated in this survey. Participants had extensive experience with the Fish and Wildlife Service managers (i.e., they contacted WMD managers an average of almost 11 times/ year) and had good working relationships with managers. Almost all participants had visited waterfowl production areas, and many were members of conservation organizations (e.g. Ducks Unlimited, Pheasants Forever, and other organizations). Of the 40 people interviewed, 37 were men, averaging 51 years of age and averaging 39 years living in the area.

The participants were able to list benefits of the Wetland Management District activities provide to rural communities and citizens. The following list of benefits is ordered from benefits frequently mentioned, to benefits not as heavily discussed but still mentioned often.

- Provides areas for hunting waterfowl and upland bird species,
- Protects wetland areas for ecological reasons,
- Retains water and helps with flood control,

- Improves water quality
- Improves communities economically through purchasing of hunting equipment
- Provides opportunities to introduce children to hunting, and
- Adds to the overall quality of life for rural residents

Many participants believed that the Wetland Management District managers were good at acquiring and managing land. They appreciated the habitat provided in the Waterfowl Production Areas and the work that District managers do with farmers to increase wildlife habitat by taking potential wetlands out of agricultural production. Participants also praised the cooperative role managers have with local citizens and conservation organizations.

In addition to public meetings and survey, the following focus group meetings were conducted to develop the issues, goals, and objectives for the Plan. These meetings included the District Managers and invited participants from the University of Minnesota, The Nature Conservancy, and the U.S. Geological Survey, Northern Prairie Wildlife Research Center.

Following the focus groups meetings were held:

- Fergus Falls, Minnesota March 2-4, 1999
- Alexandria, Minnesota July 27-29, 1999
- Twin Cities, Minnesota August 26, 1999

Concurrent with the focus group meetings, planning staff met with individual Districts numerous times to review issues and discuss District management.

A wide range of issues, concerns and opportunities were expressed during the planning process. Numerous discussions among Refuge and planning staff, focus groups and resource specialists brought to light several recurring themes. Issues fall into broad categories of wildlife, habitat and people. Dealing with these issues is at the core of the development of goals and objectives for the management of the Minnesota Wetland Management Districts.

Planning Issues

Wildlife and Habitat

1. Can we improve waterfowl productivity?
2. Strategic Acquisition: Can we buy the highest priority land in the most efficient and cost-effective manner possible?
3. Managing Uplands: Can we improve prairie restoration by planting the right seeds, using the right management tools?
4. Managing and Restoring Wetlands: How do we manage wetlands to maintain or increase productivity?
5. Can we improve biological inventories and monitoring on WPAs?
6. Can we stem the loss of migratory birds in the Northern Tallgrass Prairie Ecosystem?

7. Can we manage District land to preserve, restore and enhance threatened and endangered species, rare and declining species, and address regional priority species?

8. Under what circumstances should we reintroduce rare native species to District land?

9. How do we mitigate negative external influences such as contaminants on WPAs and reduce its impact on long-term health and productivity of District land?

10. How do we balance management for Federal trust species with the needs of resident species?

11. How do we reduce crop loss caused by Canada geese foraging on private land adjacent to WPAs?

12: Invasive species, both exotic and native, are negatively impacting the natural ecological balance of grasslands and wetlands on WPAs.

13. What is the Long Range Goal of the Partners for Fish and Wildlife Program (Private Lands) be on Wetland Management Districts?

Public Use

14. There are conflicting views concerning the costs and benefits of federally owned land in a community. Who benefits? Who pays?

15. How do we provide adequate facilities and programs for the public to fully enjoy wildlife-related recreation in a way that is compatible with our main mission?

Operations

16. Districts need sufficient staff in critical areas to fully meet resource challenges and opportunities.

17. Districts need office, maintenance, and equipment storage facilities to carry out their mission.

18. Vehicles and other necessary equipment need to be replaced on a regular basis according to Service standards.

19. Funding is needed to develop and manage newly acquired WPA land and facilities.

20. Discretionary money is needed for managing newly acquired land. Historic preservation responsibilities and other cultural resource concerns add cost and delays.

21. Individual WPA development plans and record keeping need to be updated.

22. The Districts need to be consistent in their application of policy and resource protection efforts.

Comprehensive Conservation Plan Goals

The following Goals were identified through a variety of meetings to address the issues raised during the planning process:

Wildlife and Habitat

Wildlife: Strive to preserve and maintain diversity and increase the abundance of waterfowl and other key wildlife species in the Northern Tallgrass Prairie Ecosystem. Preserve, restore, and enhance resident wildlife populations where compatible with waterfowl and the preservation of other trust species. Seek sustainable solutions to the impact of Canada geese on adjacent private croplands.

Habitat: Restore native prairie plant communities of the Northern Tallgrass Prairie Ecosystem using local ecotypes of seed and maintain the vigor of these stands through natural processes. Restore functioning wetland complexes and maintain the cyclic productivity of wetlands. Continue efforts for long-term solutions to the problem of invasive species with increased emphasis on biological control to minimize damage to aquatic and terrestrial communities. Continue efforts to better define the role of each District in assisting private landowners with wetland, upland and riparian restorations

USFWS Photograph

Acquisition: Within current acquisition acreage goals, identify the highest priority acres for acquisition taking into account block size and waterfowl productivity data. These priority areas should drive acquisition efforts whenever possible. Service land acquisition should have no negative impact on net revenues to local government. Understand and communicate the economic effects of federal land ownership on local communities

Monitoring: Collect baseline information on plants, fish and wildlife and monitor critical parameters and trends of key species and/or species groups on and around District units. Promote the use of coordinated, standardized, cost effective, and defensible methods for gathering and analyzing habitat and population data. Management decisions will be based on the resulting data.

Endangered Species/Unique Communities: Preserve, enhance, and restore rare native northern tallgrass prairie, flora and fauna that are or may become endangered. Where feasible in both ecological and social/economic terms, reintroduce native species on WPAs in cooperation with the Minnesota DNR

People

Public Use/ Environmental Education: Provide opportunities for the public to use the WPAs in a way that promotes understanding and appreciation of the Prairie Pothole Region. Promote greater understanding and awareness of the Wetland Management District's programs, goals, and objectives. Advance stewardship and understanding of the Prairie Pothole Region through environmental education.

Operations

Preparation of WPA Development Plans: Complete Geographic Information System (GIS) based WPA Development Plans for each unit in each District. Provide Districts with GIS to assist with acquisition, restoration, management and protection of public and private lands.

Provide necessary levels of maintenance, technician and administrative support staff to achieve other Wetland Management District goals: Provide all Districts with adequate and safe office, maintenance and equipment storage facilities Acquire adequate equipment and vehicles to achieve other District goals. Maintain District equipment and vehicles at or above Service standards.

Ensure that annual capital development funds are large enough to meet necessary development of new WPA land: Have adequate funds available each year to permit completion of maintenance needs for each Wetland Districts current land base of Waterfowl Production Areas.

Develop and apply consistent policies for habitat, public use, and resource protection and ensure frequent coordination among Districts, both in Minnesota and in neighboring states with WPAs (North and South Dakota, Iowa, and Wisconsin).

Chapter 3: The Environment

Geographic/Ecosystem Setting

Three landscapes come together in Minnesota: prairies, deciduous woods, and coniferous forests of the north. This variation in landscape is caused by changes in climate and precipitation from north to south and is reflected in the wide diversity of plants and animals inhabiting the state (Wendt and Coffin 1988; Hargrave 1993; Aaseng, et al. 1993). The Districts own land within all three habitat types and all have changed dramatically since settlement, none more than the prairie landscape (Figure 3).

Photo Copyright by Jan Eldridge

Prairie Grasslands

At one time, the western edge of Minnesota was continuous prairie and scattered woodlands dotted with small wetlands, known as potholes. Snow melt and spring rains were contained in these small wetlands and released slowly into surrounding streams. The wetlands acted like a natural flood control system. All of this has changed since settlement. Now, only 150,000 acres of native prairie remain out of an original 18 million (Noss, et al. 1995). In some areas, almost all of the potholes have been drained. Remnants of prairie and their associated wetlands are scattered and rare. They form the last refuge for many species of prairie plants and wildlife.

Deciduous Woods

The deciduous forest of Minnesota extends from the northern aspen parkland to maple basswood forests of the southeast. The term "deciduous" refers to trees that lose their leaves in the fall. There are many forest communities within this landscape. The northern aspen parkland is typical of a more Canadian landscape, with open understory, wet meadows, aspen, willow and alder thickets. The communities include wild flowers like the northern gentian and prairie-fringed orchid, wildlife such as the moose, sandhill crane, sharp-tailed grouse, black-billed magpie and yellow rail. Further south, the deciduous forest changes to one dominated by maple and basswood trees and oak savannah. Birds of these hardwood forests include the tufted titmouse, scarlet tanager, eastern screech owl, broad-winged hawk, barred owl, red-eyed vireo, and wood thrush to name just a few. Wild flowers in the spring are a special feature of these woods including trillium, hepatica, blood root, trout lily, Dutchman's breeches and spring beauty (Moyle and Moyle 1977; Henderson and Lambrecht 1997).

Figure 3: Minnesota Wetland Management Districts Ecosystems

Coniferous Forest

The coniferous forests dominate the northeastern portion of Minnesota. They are characterized by red and white pines, balsam-fir, spruce and white cedar mixed with other deciduous species. While the coniferous forests dominate Minnesota landscapes, the Districts own very little in this landscape because it is not particularly productive for waterfowl.

Climate

The climate of Minnesota is seasonal and highly variable. Average annual precipitation ranges from 20 inches in the northern aspen parklands to 32 inches in the southwestern prairie coteau. Within the eastern Great Plains, precipitation falls during two peak periods, one in early summer and a less pronounced peak in September. Average maximum annual temperature ranges from 50 degrees Fahrenheit in the northern aspen parklands to 58 degrees Fahrenheit in the prairie coteau. Average minimum annual temperature ranges from 23 degrees F in the aspen parklands to 36 degrees F in the prairie coteau. The growing season ranges from 125 days in the aspen parklands to 180 days in the prairie coteau (Hargrave 1993; Ostlie et al. 1996).

Hydrology

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Conversion of the prairie to agriculture and the general development of the area over the past 130 years has greatly changed the region's hydrology.

The Districts contain five major watersheds: the Red, the Upper Mississippi, the Minnesota, the Missouri, the Cedar and Des Moines Rivers (Figure 4). Of these, the Red, Minnesota, and Des Moines are clearly the most important hydrologically and culturally in terms of water flow, impacts to land use, and associated water resources. The Minnesota River is considered the state's most polluted river. The Red River watershed has been degraded by dam construction, agricultural practices, channelization and loss of riparian vegetation.

The Red River is the only major American river that drains northward into Hudson Bay. Total drainage area in the U.S. is 39,200 square miles, of which 17,806 are in Minnesota. Due to regional patterns in precipitation, evapotranspiration, soils, and topography, the Red receives most of its flow from its eastern tributaries. Ten of these tributaries traverse the Districts.

Many rivers in the Districts have been channelized in the downstream reaches to improve agricultural drainage. Most of the small wetlands that once held spring melts have been drained for agriculture through ditches or subsurface tile systems. Now, the water rushes off the land and creates annual spring floods.

River hydrology has been further altered through the construction of approximately 270 flood control structures within the Minnesota basin of the Red River. Despite these flood control projects, the Red remains a flood-prone system due to heavy spring snow melt, the flatness of the area, and snow/ice melting in the upstream area of the basin before that in the downstream areas.

Figure 4: Minnesota Wetland Management Districts Hydrology and Key Rivers

The Roseau, Red Lake, Wild Rice, and Buffalo rivers account for three-fourths of the flood damage on the Minnesota tributaries.

The Minnesota River drains an area of 15,500 square miles within the District area. The Minnesota River begins in Browns Valley, where it is separated from the watershed of the Red River (Lake Traverse) by the Big Stone Moraine. As it flows toward its meeting with the Mississippi, the Minnesota River is impeded by four flood control reservoirs located at Big Stone, Big Stone/Whetstone, Marsh Lake, and Lac Qui Parle. Two smaller dams near Granite Falls slow the flow, but do not impound any water within the floodplain. One small hydroelectric dam operates near Mankato on the Blue Earth River. Flooding along the Minnesota is common within the floodplain, but does not have the same cultural or ecological impacts as on the Red River because the steep slopes of the Minnesota contain the river.

Southwestern Minnesota differs dramatically from the flat topography to the north and east. The Coteau des Prairies region grades from gently undulating to steeply rolling and hilly. These glacial moraines and ridges are well drained and have few depressions. This area flows mostly southwest into the Missouri River. The outer edges of the Coteau are less well drained and contain numerous wetlands and lakes. The Big and Little Sioux rivers are the two largest rivers in this area. Both flow to the southwest and into Iowa.

Geology

The area has a varied geological history but throughout the region, the departure of the last glacier, The Wisconsin, is still evident upon the land. The retreating glacier left behind gently rolling hills of gravel deposits with many scattered potholes, remnants left by melting glacial ice. In relative geologic time, the rivers that drain this land are new and inefficient (Ojakangas and Matsch 1982).

The southwest corner of Minnesota escaped the Wisconsin glaciation and features more bedrock exposures because that area escaped a blanket of glacial till or drift. Big Stone District is named after some of the rocky features of the bedrock exposure. Rivers and streams in this area are better developed, resulting in more efficient drainage systems.

Thousands of natural basins were left in the wake of thawing ice. Glacial lakes, the largest of these being Lake Agassiz, left behind a series of beaches and as they overflowed, they cut huge river channels. Lake Agassiz created a moraine at Browns Valley that spilled over to become the glacial River Warren, later to become the Minnesota River. The water volume of the Minnesota is a fraction of the River Warren, which flowed through its broad river valley with high stream terraces, dwarfing today's river. The Minnesota has eroded deeply into the glacial sediment and has exposed some of the world's oldest rocks along its narrow valley.

Wind-blown loess also was a major influence in the soils of Minnesota, especially in southwest Minnesota. The disintegration of the Wisconsin Glacier left a distinctive, fine-textured till containing a high volume of Paleozoic limestone and Cretaceous shale fragments. Combined with the loess swept by surface winds, it is the parent material for most of today's prairie soils of western and southern Minnesota.

District Resources

Wildlife

Waterfowl

The prairie pothole region has historically been recognized as the most important waterfowl production area in North America. Surveys have shown that although this area represents only 10 percent of the breeding habitat, it averages 50 to 75 percent of the duck recruitment each year in North America.

Waterfowl species that use the prairie wetlands of Minnesota include: redhead, northern shoveler, blue-winged teal, mallard, gadwall, wood duck, canvasback, ruddy duck, wigeon and Canada goose. Other waterfowl use the prairie wetlands to a lesser degree: pintail, lesser scaup, and ring-necked duck. These species rely on grains for food most of the year but during the spring and summer, they shift to aquatic plants and insects. They depend on the wetlands for food during the breeding season.

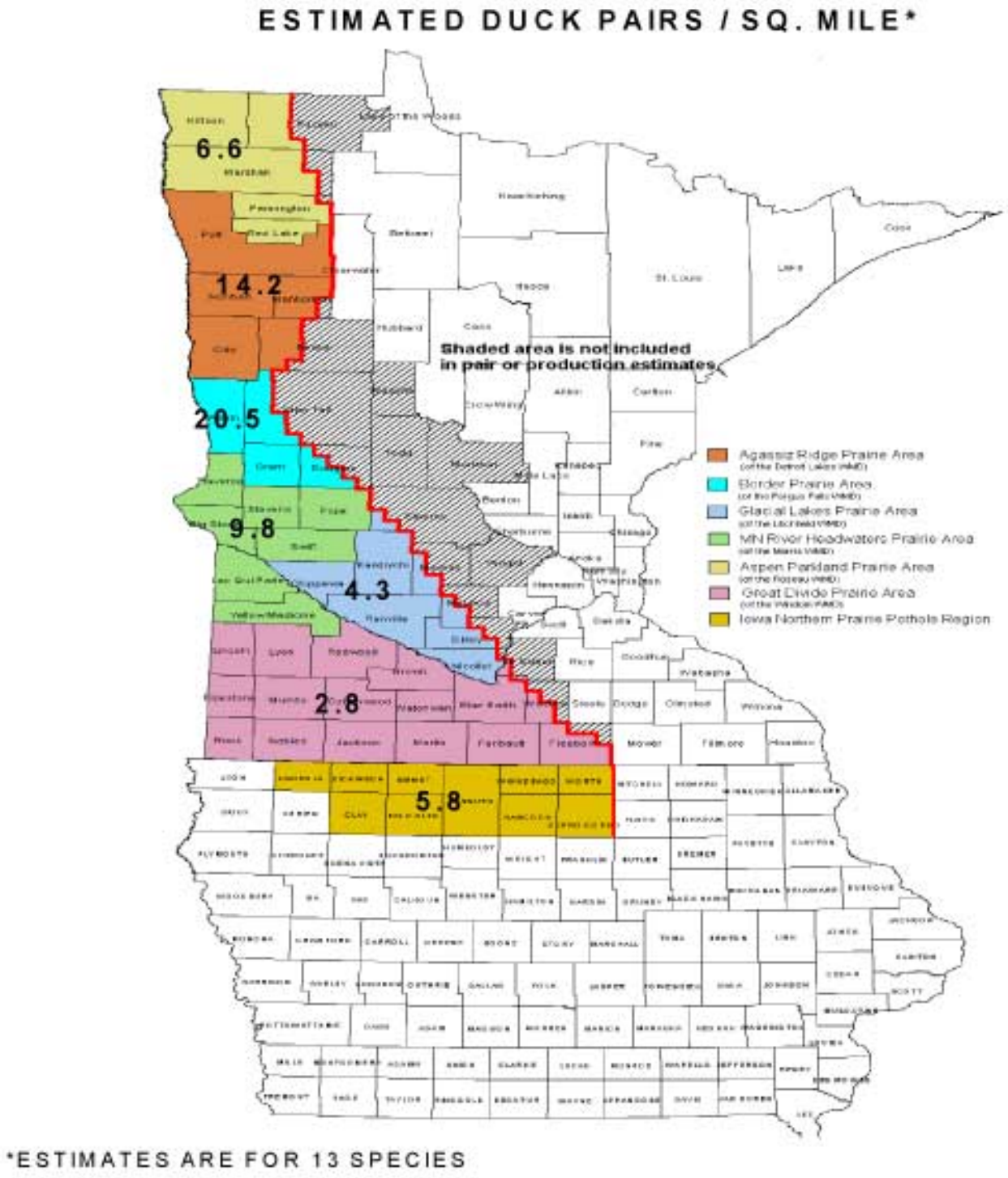
Photo Copyright by Jan Eldridge

The Habitat and Population Evaluation Team (HAPET) census waterfowl populations within the Wetland Management Districts of western Minnesota. Summary statistics generated by HAPET provide a necessary overview of waterfowl production and land use in the Districts. Their results show the variability between districts in breeding pair density. The average duck pair density ranges from 23.5 in the Fergus Falls WMD to 3.7 in the Windom WMD (Figure 5).

Rich soils and prairie wetlands make the region ideal for waterfowl; but also highly productive for agriculture. The corn and soybean belt overlaps extensively with the southern prairie pothole region. Massive conversion of wetlands and prairie to agricultural fields has dramatically altered the landscape, the hydrology and the region's carrying capacity for waterfowl

Some waterfowl species are more susceptible than others to the transformation of prairie into agriculture. Mallards and blue-winged teal have been fairly successful in agricultural landscapes such as western Minnesota. Northern pintails, on the other hand, have declined more dramatically than any other waterfowl species in North America (Ducks Unlimited 1990). At the turn of the century, pintails were probably as common in the prairies as mallards (Roberts 1932). Pintails favor ephemeral ponds, which were the first and easiest to drain. They often nest far from water and ducklings have to move overland to get to ponds shortly after they hatch. In the current landscape, newly hatched ducklings cross plowed agricultural fields in the spring and they are vulnerable to predation. Like pintails, gadwalls were once very common in this region. In 1879 gadwalls were reported to be as abundant as mallards if not more so (Roberts 1932, in Galatowitsch and van der Valk 1994). Now, gadwalls comprise less than 1 percent of the breeding population in western Minnesota (Green and Janssen 1975). Roberts (1930) reported, the gadwall "...suffered most severely from the settling of the country, probably as much from breaking-up of the prairie, where it commonly nested, as from the hunters." (Galatowitsch and van der Valk, 1994). At the

Figure 5: Estimated Average Duck Pair Density, 1987-1999



turn of the century, canvasback and redheads were common on the largest lakes and marshes. Initially, over-hunting depleted canvasback populations but the decline of wetland habitat, especially the wild celery beds, made it difficult for them to recover (Galatowitsch and van der Valk 1994). Another diving duck, the scaup, was also common but is now primarily a migrant through the region.

Research has shown that ducks nesting in large blocks of grassland habitat (1,000 to 10,000 acres) reproduce more successfully than ducks nesting in smaller blocks (200 to 500 acres) (Burger et al. 1994; Ball et al. 1995). Ron Reynolds of the HAPET in North Dakota found waterfowl production increased on WPAs near large blocks of CRP land (personal communication). His results show the importance of working with partners to increase effective habitat block size and offset habitat fragmentation and contamination.

A major factor depressing duck numbers is low nest success due to nest destruction by predators on small units of habitat. Predators are quick to find these remnant areas and concentrate their hunting activities on the vulnerable ground nests of waterfowl. In some habitats, predators such as red fox, raccoon, mink and skunk are able to take virtually every duck nest and many of the attendant hens.

Although agriculture has been an important feature in this area for over 100 years, it has been particularly intensive during the last several decades. Conversion from small, diverse family farms to large agricultural operations specializing in monocultures of small grain and row crops has eliminated habitat on private lands such as pasture, hayland and wetlands. Grassland birds are forced to nest in ever-dwindling fragments of remaining cover. Often the only nesting sites available are small isolated areas such as roadside ditches, abandoned farmsteads, rock piles or isolated patches of habitat such as our Waterfowl Production Areas (WPAs).

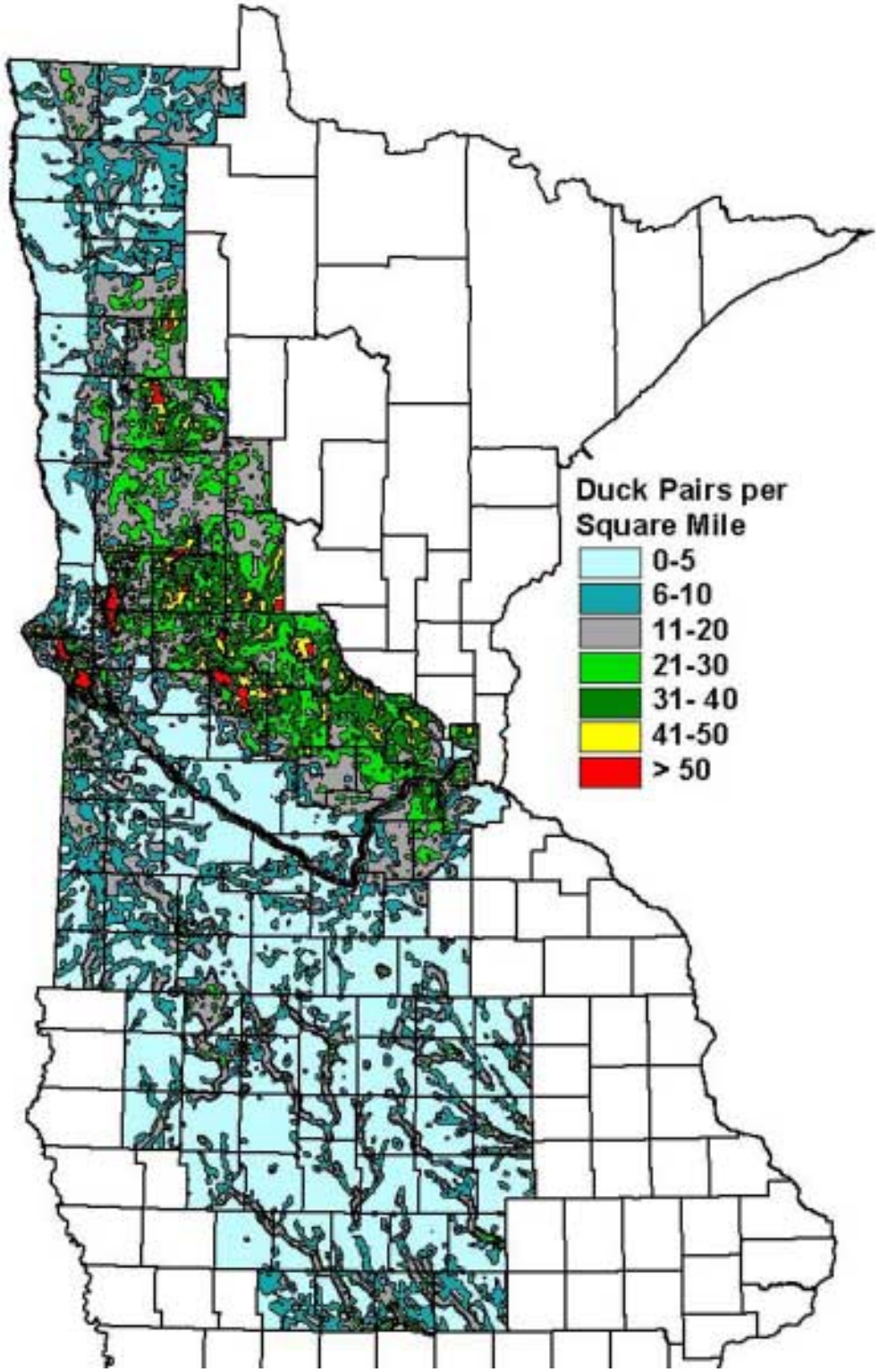
The average block size for Waterfowl Production Areas in western Minnesota is only 210 acres. In part, the small size of most acquisitions is due to the nature of the Small Wetlands Acquisition Program (SWAP). The original SWAP approach was simple — purchase only a minimum of acres in fee-title and surround them with permanent easements.

In truth, it is difficult to purchase large tracts of land in prime agricultural areas. What research identifies as an optimal size for wildlife is not always possible given the competing needs for the land. Local county land boards often will not support taking large blocks of land out of agricultural production and off the tax role. Areas that are important for waterfowl may not be available or for sale. To purchase land strategically, managers are faced with the difficult task of finding willing sellers in the most productive areas for waterfowl.

The landscape level monitoring by the Habitat and Population Evaluation Team (HAPET), shows that waterfowl success varies depending on location within the state. There is even great variance between WPAs within a single District. The HAPET has produced a map for each district that ranks locations for waterfowl production. The maps are known as “thunderstorm maps” because they resemble doppler radar weather maps (Figure 6).

Existing GIS mapping data can be used to evaluate land acquisitions. Available information can be compiled (as illustrated in Figure 7) to pick land parcels that have high potential for waterfowl and that are located near other conservation lands, such as state, county or CRP set-aside land, to increase the “effective size” of each unit.

Figure 6: Predicted Settling Density of Dabbling Duck Pairs



This approach can aid in setting priorities of acquisition. Ideally, managers could use these maps to identify "hot spots" within their district for purchase as WPAs.

The Districts are trying to combat the unnatural impact of predators in small pieces of habitat by removing abandoned buildings and brush. Abandoned farmsteads are prime denning sites for major nest predators such as skunks (Lariviere and Messier 1998a, 1998b; Lariviere et al.1999). In addition, the Districts place nesting platforms in many wetlands, and predator control is practiced on a limited scale in conjunction with electric fence exclosures on 350 acres in Fergus Falls and 10 acres in the Morris Wetland Management Districts.

Another threat to waterfowl reproduction is the increasing application of agricultural chemicals such as fertilizers, insecticides and herbicides on cropland adjacent to WPAs. Research has identified agricultural chemicals as important factors in decreasing bird populations directly as well as affecting their food resources in wetlands (see Chapter 3, External Threats).

Not all species of waterfowl are in decline. In recent years, the population of Giant Canada Geese has exploded across many of the Districts. Many WPAs contain the large wetlands favored by geese. These wetlands are often adjacent to private agricultural land. Canada geese are upland grazers and, like most wildlife, will take advantage of the bounty planted nearby, whether it be succulent sprouts of soybeans, corn, or the grass of lawns and golf courses. On certain areas, geese can cause considerable financial hardship for farmers by wiping out relatively large areas of crops.

Although the more common species of ducks and geese in Minnesota have increased over the last decade, many are still below the goals of the North American Plan.

Migratory Birds

Minnesota Wetland Management Districts contain habitat important to bird species other than waterfowl, including songbirds, marsh and wading birds, shorebirds, raptors, and upland game birds. Approximately 243 species of birds regularly use the Districts at some time during the year, with 152 nesting species (Appendix C).

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The U. S. Fish and Wildlife Service and the Minnesota Department of Natural Resources, Partners in Flight, an international bird conservation initiative, and others have evaluated the status of migratory birds, identifying "species of concern" at the state, regional, and national levels. Partners in Flight have developed a bird conservation plan that focuses on declining grassland and wetland birds in the Northern Tallgrass Prairie Bird Conservation Region. This plan provides information on the habitat needs of these species and proposes a model of landscape-level habitat conservation for grassland birds (Fitzgerald et al. 1998). In the Districts, 48 birds identified as "species of concern" are rare, declining, or dependent on vulnerable habitats, including 43 that breed there. This list does not include hunted waterfowl or federally-listed threatened or endangered species, which are dealt with in another section of this document (Appendix B).

About 44 percent of the species of concern depend on some type of grassland habitat. Important habitats in the District include native and restored prairies, seeded grass-

lands (cool- or warm-season grasses), light- to moderately-grazed pastures, Conservation Reserve Program lands (CRP), sedge meadows, old fields, and hayfields (if not mowed before July 15). In North America, grassland birds have exhibited steeper declines than any other avian group. Their decline has a number of causes: loss of breeding and wintering habitat from agriculture, urbanization, habitat degradation from fire suppression, inappropriate grazing regimes, woody plantings, pesticides and nest predation and cowbird parasitism.

Within the category of "grassland birds," individual species show a variety of habitat preferences based on vegetation height, cover density, grass/forb ratio, soil moisture, litter depth, degree of woody vegetation, and plant species composition. It is important to maintain a mosaic of grassland habitats to meet the varying needs of grassland birds.

Some of the species of concern found in the Districts are area-sensitive, which means they require large, contiguous blocks of habitat to reproduce successfully. Area-sensitive species include the greater prairie-chicken, northern harrier, upland sandpiper, bobolink, Henslow's sparrow, and savannah sparrow.

Vertebrate and Invertebrate Species of Concern

"Species of concern" refers to those species for which the Service has incomplete and inconclusive information, but which might be declining in range, numbers, or security. Service and state agency biologists and other experts confer on and use natural heritage data bases and other published and unpublished information to follow the welfare of these species. They have no protection under the Endangered Species Act (Act) and are not candidates for listing.

These species are a diverse group of animals united by two factors: (1) the Service is watching them, and (2) they occur within the general area and thus could appear in or near tracts within the Districts. Some of these animals occur only in prairie habitats. Some of the arthropods can live only in good tallgrass prairie habitat and thus are good indicators of high quality prairies. It is not possible to predict which, if any, of the species may occur on tracts within the Districts, nor predict how their occurrence would be a factor in decisions regarding individual tracts. They are necessary components of a healthy, functioning tallgrass prairie ecosystem and as indicators of prairie tract quality.

Region 3 of the Service has developed a Resource Conservation Priorities (RCP) document that includes all species of concern within the Region (U.S. Fish and Wildlife Service 1998). The Minnesota Department of Natural Resources maintains an official state list of animals being watched for changes in abundance and distribution, and of animals that are endangered or threatened and protected by state law. The Service will consider species listed by the State of Minnesota along with Service species of concern in evaluating prairie sites and developing site protection measures.

Reptiles, Amphibians, and Insects, Vertebrates and Invertebrates

Reptiles, amphibians and insects may have limited popular appeal, but each species plays an important role in the prairie ecosystem. The degree of interconnectedness in the tallgrass prairie ecosystem is high. Landmark species such as the eagle, badger and coyote find their food sources in these groups. Prairie plant diversity depends upon pollination and seed dispersal, as well as soil aeration by the great variety of insects. Grasshoppers (family Orthoptera) are major herbivores in the prairie ecosystem, and many native prairie flowers rely on bees, butterflies and others for pollina-

tion. Numerous prairie birds, amphibians, reptiles and small mammals feed exclusively or partly on insects. The web of successes and failures within tallgrass prairie communities is anchored to every point of diversity within the system, and the protection of this entire spectrum is necessary for the persistence of its varied parts.

Listed Endangered and Threatened Vertebrates and Invertebrates

This section describes animals that are Federally listed under the Endangered Species Act of 1973, as amended, and are listed as either endangered or threatened.

Endangered Mammals

Gray wolf, *Canis lupus*: Experts estimate approximately 2,000 gray wolves presently occur in Minnesota. Wolf numbers and range appear to be increasing in Minnesota. Wolves are no longer exclusive residents of Minnesota's forested wilderness areas, and adult wolves from Minnesota have dispersed through central and western Minnesota to North and South Dakota. The Service recognizes the improving range and security of the species and will reclassify the wolf when appropriate.

Endangered Birds

Bald eagle, *Haliaeetus leucocephalus*: Bald eagles have increased in abundance and distribution across the United States, including Minnesota. In the 1990s nesting territories increased in Minnesota every year from 437 in 1990 to 618 in 1995. Increasing numbers of migrating and wintering eagles also occur across Minnesota where they find sheltered night roosts and feed on waterfowl, smaller wild mammals, and fish in open water areas. Bald eagles became endangered because of habitat loss, but especially because of DDT use following World War II. Today, the DDT threat is largely gone. Now the challenge is to prevent contamination and loss of sites that eagles depend on for nesting, feeding, migration and wintering.

Piping plover, *Chadarius melodus*: Piping plovers are tenuously present in Minnesota. They nest in Lake of the Woods, east of the Districts. Piping plovers nest in coastal areas, but they are also prairie birds, nesting across the Great Plains of the United States and Canada, but in perilously low numbers. The loss of prairie wetland areas contributes to their decline. Like many shorebirds, piping plovers feed on immature and adult insects and other invertebrates at the water's edge; they winter primarily along beaches, sandflats, and algal flats on the Gulf of Mexico.

Least tern (eastern population), *Sterna antillarum*: The least tern nests along large rivers of the Colorado, Red, Mississippi, and Missouri River systems. This species is a potential nester in the Missouri River area. It nests on sand and gravel bars and protected beach areas of large rivers and winters in coastal Central and South America. The species is endangered because human disturbance and alteration of river systems has rendered much of its nesting habitat unusable. Pesticides may reduce food available to the tern by reducing the numbers of small fish in their feeding areas.

Reintroductions

The public has an interest in seeing presettlement native wildlife species returned to the landscape. Examples include greater prairie chickens, trumpeter swans, bison, and wolves. Giant Canada geese, once thought extinct, have returned to the prairies of Minnesota in numbers as a result of captive breeding and reintroduction programs. However, at times restoration efforts, and the ensuing adaptability of the species like Canada geese, can create its own set of management problems (see next issue). Due

to the relatively small size of WPAs and the concerns for impacts off of WPAs, reintroductions of species like bison and wolves are not practical. However, trumpeter swan reintroductions have been successful and well-received by the public, while prairie chicken reintroduction is showing some sign of success depending on the area. There is also the potential for reintroducing species of prairie plants and native small mammals, reptiles and amphibians and even insects like the Dakota Skipper butterfly on certain units.

Management of Resident Species

Federal trust species are generally those that cross state and international boundaries or are afforded national protection through various laws and treaties, such as the Migratory Bird Treaty Act and the Endangered Species Act. The well-being of waterfowl populations is a classic Federal trust responsibility and the main purpose for the creation of the Small Wetland Acquisition Program in the 1960s. This does not mean that resident species such as white-tailed deer and pheasants found on WPAs should not receive management attention. Rather it is the degree of management focus, based on the knowledge that management for trust resources like waterfowl will usually benefit the myriad of resident wildlife that share the prairie-wetland landscape.

Local and regional residents, however, may often favor the management for those species like white-tailed deer and pheasant that provide consumptive recreation opportunities. Thus, managers are often faced with requests for food plots, tree and shrub plantings, or direct stockings of game species that may have a negative effect on the primary purpose of waterfowl production and the broader goals of restoring native plant communities. The key is to seek the proper balance between practices focused on trust species and those that can accommodate the public's desire for resident wildlife management.

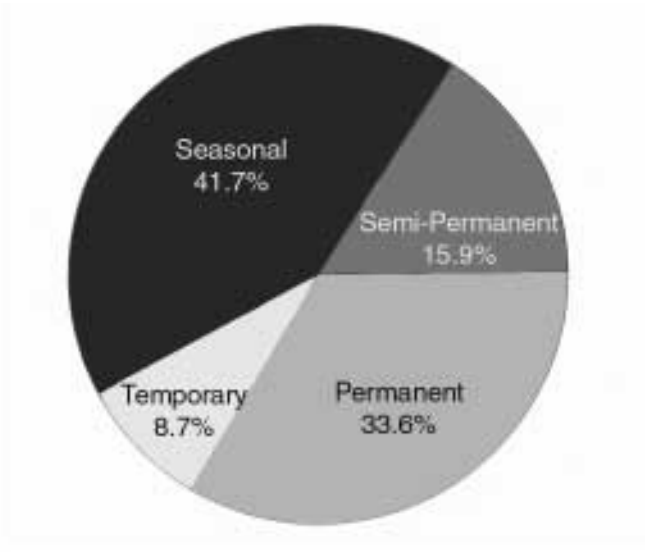
Habitat

Wetlands and Riparian Habitat

Prairie wetlands and prairie streams are an important part of the prairie ecosystem. Minnesota is naturally rich in wetland and riverine habitats (Appendix D). Western Minnesota is part of the prairie pothole region, characterized by numerous, shallow wetlands known as potholes. These wetlands provide essential fish and wildlife habitat, permit ground water recharge, and act as filters of sediment and pollutants. They reduce floods by storing water and delaying runoff. The region once included about 20 million acres of these small wetlands. They were unconnected and poorly drained and in the spring they retained water, acting like a great landscape sponge. Over the course of the season, water drained slowly, so spring flooding was reduced or eliminated.

Settlers found the shallow wetlands difficult to farm. In addition, the wetlands kept the water table high so much of the land was saturated in a wet year. When the land was converted to farms, the new owners built drainage ditches, straightened streams and drained shallow wetlands off their land. Today, only about 5.3 million acres remain in 2.7 million basins within five states. Now, in the spring, water rushes off the land and floods the streams and rivers. Drainage has been so extensive that in many areas the water table has been lowered and the hydrology of the entire region has been transformed.

Figure 7: Wetland Distribution by Type, Windom WMD



More than 78 percent of the remaining wetland basins are smaller than 1 acre in size. Nearly two out of three of the remaining wetlands in Minnesota are privately owned; consequently, they are vulnerable to continued drainage, development and pollution.

The Wetland Management Districts have focused on saving and restoring the small wetlands of Western Minnesota. They have been remarkably successful in saving a variety of wetland types (Figure 7). Wetland diversity is important because wetlands change continuously; so, a single wetland can not be maximally productive all the time. Waterfowl use specific types of wetlands at different times during the breeding season. Laying hens may forage in ephemeral, temporary and seasonal wetlands early in the season and shift to semipermanent and permanent wetlands after the brood is hatched. Marsh birds need a variety of wetlands in close proximity so they can shift from one wetland to another as the wetlands cycle through different phases. It is very important that natural wetland complexes be preserved. Wetland complexes include a variety of basins, some shallow and some deep, in close proximity. Diverse wetland complexes are rare today because most shallow ephemeral, temporary and seasonal basins have been drained.

Saving single, isolated wetlands is much less valuable than saving several wetlands in a wetland complex. The Wetland Management Districts focus on acquiring wetland complexes with a variety of wetland types.

The fluctuating water levels in the shallow wetlands are natural to the dynamic pattern of precipitation in the prairie. The changing water level results in circular bands of vegetation around each basin because different plant species have different tolerances for saturated soils. The depth of the basin also affects the kind of vegetation that grows. The drying pattern is one of the features used to classify wetland basins (Cowardin et al.). Deeper basins have perineal emergent vegetation such as cattail and dry every 5 to 10 years. Wetlands that dry every other year or on a several year cycle are called semi-permanent or permanent wetlands. Basins that dry

Figure 8: Marsh Vegetation Cycles

every year are temporary and seasonal wetlands. Some very shallow basins dry early in the spring after the frost leaves the ground and as a result are called ephemeral wetlands.

Freshwater wetlands like those in the prairie pothole region are among the most productive in the world (Weller 1982). The dynamic water cycle creates a rich environment for many waterfowl and other marsh birds. Cycling water accelerates decomposition of marsh vegetation, resulting in a natural fertilizer. When the basins recharge in the spring, the water becomes a soup of nutrients and supports a diverse and healthy population of aquatic invertebrates, which feed reproducing marsh birds throughout the spring and summer. In the larger basins, the vegetation changes from densely closed cattail or bullrush cover to completely open over a period of years (Figure 8). In the process of transition, the cover vegetation moves through a phase, known as hemi-marsh, when clumps of emergent vegetation are interspersed with open water (Weller 1982). In this phase, the structure of the vegetation itself creates habitat and stimulates the production of aquatic invertebrates. The marsh, in this phase, hosts the maximum number of marsh birds. Unfortunately, the phase is only temporary and wetlands cycle out of it in 1 to 3 years.

The prairie potholes are too shallow to be fish habitat but they have been used in the past as hatcheries for minnows and walleye fingerlings. Leeches are also harvested from these shallow ponds. Unfortunately, many of these artificially introduced native species consume the same aquatic invertebrates as waterfowl. Fathead minnows occur naturally in some wetlands in the region and have a significant effect on the invertebrate populations of the wetlands (Hanson and Zimmer 1999).

Wetland restoration and management are high priorities in the Districts. In many areas, the entire hydrology of the area has been altered and restoration is not always a straightforward matter of plugging drains and filling in ditches (Galatowitsch and van der Valk 1994). Restored wetlands employ water control structures for water level management to mitigate the disruptive impact of wide scale drainage that has altered natural water cycles. Many wetlands on WPAs are flooded because surrounding wetlands on private land have been drained and the excess water moves into the WPA. Water control structures are often necessary, but these structures require funding to install and staff to maintain. Neither are in adequate supply to do what is needed.

Partners for Fish and Wildlife Program

Wetland Districts in Minnesota have led the nation in the sheer number of wetlands restored through the cooperation of private landowners in the Partners for Fish and Wildlife Program (Private Lands), which assists private landowners with the improvement or restoration of wildlife habitat on their land. Technical assistance, contracting, cost-sharing assistance and actual earth work is provided to private landowners throughout the Districts. Since the program's inception in 1987, 12,000 wetlands totaling more than 40,000 acres have been restored. However, some Districts are now finding it more difficult to find landowners willing to restore wetlands. More staff effort is required with longer trips and greater expense to seek out landowners willing to restore wetlands. Managers have also begun to explore assisting landowners with efforts to restore native prairie and riparian or stream areas.

Photo Copyright by Jan Eldridge

Additionally, Districts have restored more than 10,000 acres of native grasslands on private property through the Partners for Fish and Wildlife Program during the same period. In the past 2 years, new funding sources within the Partners for Fish and Wildlife Program have placed added emphasis on riparian and instream habitat restoration, and this has the potential to create additional opportunities for the Districts to accomplish habitat restoration on private lands.

U.S. Department of Agriculture (USDA) programs have created many new opportunities for Districts to assist in the restoration of a variety of trust resource habitats on private lands. The USDA's Conservation Reserve Program (CRP) has placed an emphasis on wetland and native prairie restoration as a condition of enrollment, and many new participants are making their lands available for wildlife habitat restoration. This presents an important role for the Districts to lend their restoration experience and expertise to make these CRP restorations as high-quality as possible. The USDA's Wetlands Reserve Program (WRP) likewise presents opportunities for Districts to accomplish migratory bird objectives on private lands utilizing other agency programs and dollars by making experience and expertise available to implement habitat restoration projects.

The Districts' perpetual easement program, which encompasses both wetland and conservation easements (both wetlands and uplands on a property), has greatly benefited from the success of the Partners for Fish and Wildlife Program over the past 10 years. Many of the private landowners who have restored wetlands on their lands through the Partners Program have since come back to the District seeking establishment of a permanent easement on their property to offer protection to their project in future years. In some Districts it is fair to say that the vast majority of new easements recorded in the past few years first started as Partners projects. This continues to meet the needs of landowners who wish to improve their land for wildlife, for themselves and for future generations.

By providing habitat restoration funds to complete restoration projects initiated by the Districts as well as technical assistance funds to provide restoration experience and expertise to other agencies' programs, the Partners for Fish and Wildlife Pro-

gram puts the Wetland Management Districts in a wonderful position to accomplish a multitude of – and a variety of – trust species habitat restoration projects over the next 10 years.

Prairie Restoration

Prairie landscapes are much more diverse than they seem at first glance. They contain hundreds of species of plants, invertebrates and wildlife. Some prairies contain as many as 200 plant species. The landscape is dominated by a relatively small number of widespread, sod-forming bunch grasses such as big bluestem, northern dropseed, and porcupine needlegrass, but flowering plants constitute the greatest number of species (80 percent in some areas). Most abundant members are from the pea and sunflower families such as wild indigos, prairie clovers and scurf peas (pea family), asters, gay-feathers, goldenrods, coneflowers and sunflowers (aster family) (Henderson and Lambrecht, 1997).

Over the past decade, virtually all plantings of upland cover on Waterfowl Production Areas have been with native grasses. In recent years, a more diverse mixture of native forbs, warm and cool season native grasses have been used. Plants within a single species vary with latitude (called ecotypes) and an effort is being made to plant local ecotypes in restorations. Harvesting techniques of existing tallgrass prairie and refinement of the cleaning and seeding process has made seed gathering easier. However, native prairie forbs remain in short supply and are extremely costly for large areas.

Prescribed fire remains a critical tool for maintaining the diversity and vigor of existing and restored prairie plants. Prescribed burns can only be done during a small window of time in the spring, so the number of acres that can be burned each spring is limited. As a result, most WPAs can not be burned on a rotation frequent enough to suppress invading shrubs and trees. Some of the Districts use haying and grazing as additional means of maintaining grassland integrity.

The Districts also manage grasslands through the selective application of herbicides during restoration. In 1990, 15,825 pounds of active ingredients representing 20 herbicides were applied to 15,533 acres of Service-managed lands in Minnesota (USFWS 1990). The most heavily and most frequently used chemical was 2,4-D. In 1987, approximately $100,000 was spent on noxious weed control on approximately 16,000 acres of District lands (USFWS 1992). Because of concern that chemical use could impact water quality (See Issue 9), the Twin Cites Ecological Services Field Office conducted a 2-year study beginning in 1992 to determine the impact of the herbicide application on wetlands in the Districts and concluded that concentrations of 2,4-D were consistently low and at concentrations that have not been shown to have an adverse affect on aquatic life (Ensor and Smith 1994).

Rare Communities

Waterfowl Production Areas provide one of the last bastions of grassland and wetland habitat in the prairie area of Minnesota. These areas provide some of the last remaining habitat for threatened, endangered, rare or unique wildlife and plants. Examples include the endangered prairie fringed orchid and prairie bush clover, and numerous species of grassland and wetland-dependent species that are declining in numbers (Appendix E). There is a need to have better baseline information on what species are present on each WPA, and to monitor the effects of wetland and prairie restoration efforts on these species of special concern.

Minnesota County Biological Survey (Survey) conducted systematic surveys of rare biological features from 1987-1995. The goal of the Survey was to identify significant natural areas and to collect and interpret data on the distribution and ecology of rare plants, rare animals and natural communities. The Nature Conservancy, through a cooperative agreement with the Service, consolidated these data and the data of the Natural Heritage Information Systems of the Minnesota Natural Heritage, and Nongame Research Program. From this data, the existing protected areas within Minnesota were mapped and community types were identified.
Within the northern tallgrass prairie ecoregion (Iowa, Manitoba, Minnesota, North Dakota, and South Dakota), 97 terrestrial natural communities have been documented.

Rare communities most at risk are the mesic, wet and dry prairie types. Three grassland communities (mesic tallgrass prairie, sedge meadow and lake plain wet prairie) are critically endangered in the United States (Noss et al., 1995). The tallgrass prairie ecosystem includes the following community types:

Dry Prairie	Mixed Emergent Marsh
Mesic Prairie	Shrub Swamp
Wet Prairie	Aspen Woodland
Mesic Brush Prairie	Aspen Openings
Wet Brush Prairie	Dry Oak Savanna
Calcareous Seepage Fen	Mesic Oak Savanna
Rich Fen	Oak Woodland/Brushland

Some community types are broken down into subtypes, for example: Sand-Gravel Subtype of the Dry Prairie Type. Others include hill and barrens (dry prairie type), saline (wet prairie type), and prairie (calcareous seepage fen type). The prairie type of Calcareous Seepage Fen is one of the most valued of the rare plant communities in the Districts. These fens typically are surrounded by wet-mesic prairie species. The seepage area itself commonly contains patches of emergent aquatic species such as cattail, hard-stemmed bulrush and common reed. Such areas occur throughout the Districts but are more common in the Lake Agassiz Beach Ridges.

Prairie community types are diverse, some are rarer than others; but with less than 1 percent of all northern tallgrass prairie remaining, special consideration is warranted for all types and subtypes. It can be argued that all intact prairie plant communities are rare. Tallgrass prairies have the highest percentage (65 percent) of rare community types of any group. The importance and uniqueness of individual tracts become apparent when ecotype variation is considered. For instance, warm season grasses generally vary one day in flowering time with each 9-14 miles in a north-south gradient. No doubt many more subtle ecotype variations occur.

Due to the disproportionate loss of community types, individual plant species of the prairie are becoming rare. For example, the western prairie fringed orchid was historically widespread and common in calcareous mesic to wet mesic prairies and sedge meadows. Wholesale conversion of its habitat to agriculture has resulted in the plant being placed on the Federal endangered species list.

Plant Species of Concern

"Species of concern" is an informal term in this document for species which the Service has incomplete and inconclusive information, but which might be declining in range, numbers, or security. Service biologists confer with state agency botanists and other experts, and use state natural heritage program data bases and other published

and unpublished information to follow the welfare of these species. Species of concern have no standing or protection of any kind under the Endangered Species Act (Act) and they are not candidates for listing under the Act. Nevertheless, the Service is interested in them and is alert for need to provide early assistance to these species to avoid the need to list them under the Act (Appendix E).

These species are a diverse group of plants united by two factors: (1) the Service is watching them, and (2) they occur within the general area and thus could appear in or near District tracts. It is impossible to predict which, if any, of the species may occur on tracts managed by the Districts. It is also impossible to predict how the occurrence of one of these species on or near a tract would factor in decisions regarding individual tracts beyond the Service's intent to recognize these species as valid and necessary components of a healthy, functioning tallgrass prairie ecosystem and as indicators of prairie tract quality.

The Minnesota Department of Natural Resources maintains an official state list of plants being watched for changes in abundance and distribution, and of plants that are endangered or threatened and protected by state law. There are approximately 80 such species in the counties of Minnesota. Biologists of the state natural resource agency and the Service maintain ongoing communication regarding these species, some of which are excellent indicators of prairie quality.

Listed Plants

This section describes plants that are federally listed under the Endangered Species Act of 1973, as amended, and are listed as either endangered or threatened.

Prairie bush clover, *Lespedeza leptostachya*: Occurs in dry, gravelly hill prairies and in thin soil prairies over granite bedrock. Common on prairies with big bluestem (*Andropogon gerardi*) and Indian grass (*Sorghastrum nutans*). More sites are known for this species than were known when it was listed and it appears able to grow in disturbed areas. The species may be stable or, if declining, declining slowly. The need for protection remains.

Western prairie fringed orchid, *Platanthera praeclara:* Occurs in moist, calcareous subsaline prairies and prairie sedge meadows and swales (Coffin and Pfannmuller 1988). The species may be stable, but loss of tallgrass prairie habitat has markedly reduced its original range. Present sites are threatened by human activities and land use changes and by invasion by leafy spurge (*Euphorbia esula*).

External Threats

Drainage and Pesticides

Waterfowl Production Areas are often islands in a sea of intensive agriculture. Natural drainage patterns have been altered throughout the landscape, increasing the frequency, intensity, and duration of water flowing into many units. Siltation, nutrient loading, and contamination from point and non-point sources of pollution are a serious problem on many WPAs. Waterfowl Production Areas are also threatened by farming trespass, dumping, wildfires, and pesticide applications on adjacent agricultural land. A recent study in Ontario examined the effects of habitat and agricultural practices on birds breeding on farmland and determined that the most important variable decreasing total bird species abundance was pesticide use (Freemark and Csizy 1993).

Recent changes in agriculture have accelerated the impact of pesticides on surrounding land. Genetically altered Round-up ready corn, soybeans, cotton and sugar beats have expanded the window of opportunity for pesticide applications and promises to

kill everything green on fields except the genetically altered crops. Another altered crop, Bt. Corn, contains a genetically engineered insecticide. Even the pollen from this plant can kill certain insects, such as monarch butterflies.

Research has shown that insecticides commonly used for sunflowers, soybeans and corn can kill wildlife directly and indirectly, for example, by decreasing the amount of food available to ducks. Ducks feed on grain much of the year but in the spring they shift to aquatic invertebrates (insect larvae, amphipods, snails, etc.); and they depend on this food source for reproduction and survival. Even when aerial pesticide applications are done carefully and wetlands are avoided, the chemicals drift into wetlands in measurable amounts and kill aquatic invertebrates (Tome et al. 1991 and Grue et al. 1986).

Insecticides have a direct effect by killing aquatic invertebrates, but herbicides also have an indirect effect on food available to waterfowl. The Service conducted a study of the impact of agricultural chemicals on selected wetlands in four of the Wetland Management Districts (Ensor and Smith, 1994). Herbicides from surrounding agricultural land enter wetlands and disrupt the functional interaction between vegetation structure and aquatic invertebrate life. The changing dynamic reduces food available to breeding waterfowl.

Seasonal and semipermanent wetlands (the majority of WPA wetlands) are the most exposed to agricultural chemicals. These wetlands are small and interspersed with croplands, which increases the probability of pesticides from over-spray and aerial drift. Most herbicides and insecticides are applied to crops in the spring and early summer, seasons that coincide with maximum runoff and waterfowl breeding. Ensor and Smith (1994) write:

"A result of our survey... indicates that prairie pothole wetlands may involve interactions of multiple herbicides (and potentially insecticides) comprising chemical "soups" unique to individual wetlands."

This study showed that "typical agricultural use" of pesticides on surrounding land had a significant impact in reducing the biological quality of WPA wetlands. Currently, the Minnesota Pollution Control Agency (MPCA) exempts "normal farming practices" from the State's wetland protection (See: Specific Standards of Quality and Purity for Class 2 Waters of the State; Aquatic Life and Recreation, Minnesota Chapter 7050, 1994).

Invasive Species

Noxious weeds are a continuing problem both ecologically and socially/politically. Invasive species present a daunting challenge to land managers. Canada thistle, leafy spurge and spotted knapweed can displace native vegetation over large areas and are a serious concern to neighboring farmers and county officials. Purple loosestrife can effectively displace cattails and other native wetland vegetation and turn productive marshes into a sea of purple flowers. Carp can destroy native submergent vegetation, which provides the base for invertebrates or direct food for migrating waterfowl. Minnows, often from past stockings by bait dealers, can cause serious damage to wetland food chains by reducing invertebrate populations needed by breeding waterfowl and ducklings.

Control of these problem species is often costly, both in terms of chemicals, equipment and staff time. Managers strive to use a balanced approach in controlling these species. Direct control, such as chemical application or mowing, is often needed on

serious problem areas. Once healthy native plant communities are reestablished, they can often compete successfully against invasive weeds. Water level control, including complete drawdowns, can eliminate carp and minnow populations on wetlands where this capability is present. Virtually all Districts are experimenting with biological controls by introducing insects that control the invading plant in its native country.

Rural Development

Rural development also threatens District lands in counties with growing populations, such as Wright County. Lands adjoining WPAs are often seen as highly desirable rural building lots that are purchased as small hobby farms or rural homesites. This can result in the WPA being "ringed" by homes, with a series of negative impacts on the WPA. Such development can limit future management such as prescribed fire; increase trespass on District lands by neighbors using ATVs, horses or vehicles; increases threats to wildlife from stray pets (cats and dogs); increases use of District land by neighbors for illegal uses such as dumping, gardening, equipment storage, etc.; and can place hunters and neighbors at odds over concerns about safety during the hunting seasons. Large-scale rural development would also bring threats from noise and storm water runoff.

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Cultural Resources

Archeological and Cultural Values

Responding to the requirement in the law that comprehensive conservation plans will include "the archaeological and cultural values of the planning unit," the Service contracted for a cultural resources overview study of Minnesota Wetland Management District. This section of the CCP derives mostly from the report, *"Cultural Resources Overview Study,"* by Teresa Halloran and others, Loucks & Associates Inc., dated August 1998. Several other sources, however, have been used.

Context

Archeological evidence for human occupation in western Minnesota extends back 10,000 years when the last glaciers retreated to the north. Small bands of hunters moved into the tundra and boreal forest and left behind their distinctive Clovis and Folsom fluted lanceolate spear points and other tools. Now identified as PaleoIndian, these people lived in diverse settings and often on the margins of lakes and wetlands.

The long Archaic period began with a warmer and drier climate that peaked with the altithermal around 4700-3000 B.C. Surface waters evaporated and rivers shriveled; bison herds dwindled, and so did the human population. In the harsh conditions, the people developed an array of stone, bone, and copper tools. The human population expanded after the altithermal.

The subsequent Woodland period commenced around 500 B.C. and extended to the arrival of Europeans. The climate and vegetation were similar to 20th century conditions. The people of this period constructed pottery and burial mounds, used the

bow and arrow, and adopted agriculture. Some people lived in larger, even fortified, summer villages. The seasonal round included bison hunting, maple sugar collecting, and wild rice harvesting. Exotic trade items came from more complex societies to the south and from other sources.

Natural and human events disrupted the traditional patterns and tribal locations. The Little Ice Age began about A.D. 1550 and caused many prairie tribes to relocate. Arrival of Europeans with Western culture goods and material and practices also caused tribes to change traditional cultural patterns and territory. Thus connecting modern Indian tribes with prehistoric antecedent cultures found in the archeological record is problematic.

Seventeenth century French and English fur traders built posts at the confluence of rivers or on the shores of larger lakes, usually near Indian villages. Western Minnesota became part of the United States as part of the Louisiana Territory, and in the second half of the 19th century immigrants settled the land as railroads expanded accessibility and markets. Settlers soon replaced dugouts and sod houses with frame houses and larger farms and farmsteads. Indian wars and treaties led to concentration of Indian tribes on reservations within and beyond the state. Highway construction, farm consolidation, urbanization, and recreational pursuits characterized the second half of the 20th century.

Existing Conditions and Cultural Resources Potential

A review of the National Register of Historic Places showed, as of October 16, 2000, the 40 Minnesota counties having WPAs and easements contained 426 properties listed on the National Register of Historic Places. The vast majority of these properties are buildings in towns and cities. A number of the properties, however, are located in rural areas and are indicative of the kinds of historic properties that could be found on the Districts: farmsteads and farm buildings, especially barns; bridges; segments of the Red River Oxcart trail; mill sites; battle sites; prehistoric archeological sites such as mounds, villages, camps, and rock art. Historic archeological sites could also be found.

But many more cultural resources sites are reported on and around the waterfowl production areas, including:

- Big Stone WMD has eight sites on WPAs, none eligible for the National Register, and 188 additional sites in the two counties.
- Detroit Lakes WMD has 114 sites on WPAs, of which 33 are not eligible for the National Register, and 531 additional sites in the five counties.
- Fergus Falls WMD has 130 sites on WPAs, of which 51 are not eligible for the National Register, and 616 additional sites in the four counties.
- Litchfield WMD has 95 sites on WPAs, of which 30 are not eligible for the National Register, and 1,128 additional sites in the nine counties.
- Morris WMD has 91 sites on WPAs, of which 17 are not eligible for the National Register, and 555 additional sites in the eight counties.
- Windom WMD has 44 sites on WPAs, of which 12 are not eligible for the National Register, and 980 additional sites in the twelve counties.

Archeological surveys have been completed on 7,400 acres of District lands.

Although cultural resources can be found almost anyplace on the landscape, prehistoric archeological sites are often found on the shores (especially the east shore) of lakes larger than 40 acres, on islands and peninsulas, where streams enter and exit lakes, and near permanent streams. Early historic period sites are often associated with water. Thus, WPAs are often in the same setting as archeological sites. Museum collections include art, ethnography, history, documents, botany, zoology, paleontology, geology, environmental samples, and artifacts. A museum collection at a District office or visitor center must adhere to the requirements in 411 DM. At this time only Morris WMD has identified a museum collection that consists of five historic objects. Archeological collections from WPAs are stored at the Minnesota Historical Society under terms of a cooperative agreement. Big Stone WMD has none; Detroit Lakes WMD has one collection of 29 items; Fergus Falls WMD has one collection of 40 items; Morris WMD has four collections of 698 items, and Windom WMD has seven collections of approximately 1,010 items. All District museum collections are covered under the Region-wide Scope of Collections Statement.

Indian Tribes and Other Interested Parties

Several Federal laws and executive orders respond to the part of the American public for whom cultural resources are an important part of the human environment and of understanding the American past and present. For the intent of these laws to be met, persons and organizations need to be informed of Federal activities that could affect cultural resources.

Contacts with Indian tribes are government-to-government unless the tribe has a Tribal Historic Preservation Officer. Seventeen tribes have been identified as having potential interest in one or more of the Districts.

Other contacts include the county historical societies, local governments, state government agencies such as the Department of Natural Resources, and other Federal agencies such as the Natural Resources Conservation Service. In addition, the District Manager issues a news release in the project area.

Management of Cultural Resources

Cultural Resources are “those parts of the physical environment - natural and built - that have cultural value to some kind of sociocultural group ... [and] those non-material human social institutions....” Cultural resources include historic sites, archeological sites and associated artifacts, sacred sites, traditional cultural properties, cultural items (human remains, funerary objects, sacred objects, and objects of cultural patrimony), and buildings and structures.

An undertaking is any Federal or federally-funded, -licensed, -permitted, or -assisted activity or project that could affect a significant (i.e., historic) property. Ground disturbance, buildings and structures modification or neglect, and landscape changes must be analyzed for impacts on archeological sites, farmsteads, objects, traditional cultural properties, sacred sites, and cultural items.

The District Managers inform the Regional Historic Preservation Officer early in the planning stage of all undertakings to allow qualified analysis, evaluation, consultation, and mitigation as necessary.

Archeological investigations and collecting are performed only in the public interest by qualified archeologists working under an Archaeological Resources Protection Act

permit issued by the Regional Director. District Managers take steps to prevent unauthorized collecting by the public, contractors, and FWS personnel. Violations are reported to the Regional Historic Preservation Officer (RHPO).

If the public turns over to District personnel "found" artifacts, the District Manager will try to determine provenance, will attempt to replace the artifact where found if it can be secure from further public collections, or will hold it until the RHPO is notified and can move it to the historical society.

Cultural Resources Management Objective: Establish a plan to fulfill requirements of Section 14 of the Archaeological Resources Protection Act for surveying lands to identify archeological resources; and Section 110(a)(2) of the National Historic Preservation Act for a preservation program.

People

Public Use of Waterfowl Production Areas

The Refuge Improvement Act established six priority uses of the Refuge System, which includes the more than 800 WPAs in Minnesota. These priority uses all depend on the presence of, or expectation of the presence, of wildlife, and are thus called wildlife-dependent uses. These uses are hunting, fishing, wildlife observation, photography, environmental education, and interpretation. Waterfowl Production Areas have been open to these uses for decades. Although Congress clearly expects managers to facilitate these priority uses, they must be compatible with the purpose for which the unit or WPA was established and the mission of the Refuge System. Compatibility Determinations for these priority uses and numerous other uses in compliance with the Refuge Improvement Act and national compatibility policy and regulations are included (Appendix F).

Most recent estimates show that 250,000 people visit WPAs each year for hunting, wildlife observation, photography, interpretive and environmental education, fishing, trapping, and other uses. Waterfowl Production Areas differ from national wildlife refuges in that they are open to hunting, fishing, and trapping by specific regulation, and open to the other wildlife-dependent activities by notification in general brochures available at each District office. New and existing WPAs are thus "open until closed" versus national wildlife refuges, which are "closed until opened."

Hunters and hunting have a long and linked history on WPAs. When Congress amended the Migratory Bird Hunting and Conservation Stamp Tax Act (Duck Stamp Act) in 1958, it authorized the acquisition of wetlands and uplands as WPAs and waived the usual "inviolate sanctuary" provisions for new migratory bird units. Thus, WPAs were intended to be open to waterfowl hunting, in part because waterfowl hunters, through the purchase of Duck Stamps and support for price increases of the stamp, played a major role in acquisition of these areas. Hunting, for both waterfowl and resident game species, accounts for more than half of the visits to WPAs. Wildlife observation, interpretation, and environmental education are encouraged on WPAs and increasing in popularity with the public. Districts are taking a more active role in fostering these uses by developing wildlife trails, interpretive signs and kiosks, outdoor classrooms, and even auto tour routes on select WPAs. At the Fergus Falls Wetland Management District, the Prairie Wetlands Learning Center provides residential, environmental education programs to schools throughout Minnesota.

In addition to these wildlife-dependent public uses, each District receives on a regular basis requests for various non-wildlife-dependent uses such as dog trials, horseback riding, plant collecting, berry picking, and special events. Also, various economic uses such as haying, grazing, and timber harvest are used as habitat management tools and involve the issuance of special use permits. There are numerous other "uses" which managers must make regular decisions on including rights-of-way requests for new or expanded roads, utilities, pipelines, and communications equipment.

To promote an understanding of what uses are and are not allowed, or allowed only on a case-by-case evaluation, the operations section describes the policies that will guide uses on WPAs.

Two major issues surfaced during plan development related to overall public use on WPAs. First, there is debate on the value of WPAs to the general public and local units of government due to changes in land use and taxation when WPAs are purchased from willing sellers. Second, funding and staff for adequate programs and facilities to better serve the public have never been on par with the generally larger and better known national wildlife refuges.

When land is purchased for a WPA, it becomes the property of the United States government and is exempt from taxation. To offset this loss in tax revenue for local governments, the Service pays three-fourths of 1 percent of the appraised value of the land to the counties in which the WPA is located. In most years, Congress has not appropriated sufficient funds to cover this level of entitlement. The result is resentful local governments and a serious issue when new tracts are brought before county commissioners and the Minnesota Land Exchange Board for approval.

The Refuge Improvement Act mandates that compatible, wildlife-dependent recreational uses involving hunting, fishing, wildlife observation, wildlife photography, environmental education and interpretation are the priority public uses of the Refuge System. In accordance with law and regulation, waterfowl production areas are open to hunting, fishing, wildlife observation, photography, trapping and environmental education.

However, many WPAs lack the basic facilities, such as parking and trails, that help the public enjoy these wildlife-dependent uses. Also, Districts do not have the funds to provide quality maps that show the public how to find WPAs. Interpretive and environmental education opportunities are limited by the lack of trained public use specialists.

Disabled User Access

Each of the wetland management districts will provide compatible and accessible wildlife-dependent recreation on Waterfowl Production Areas. Each WMD will eventually develop one WPA per county or cluster of counties with enhanced opportunities for disabled users. These features might include accessible hunting blinds, accessible trails or scenic vistas, or other opportunities for accessible wildlife-dependent recreation. Disabled users will be directed to these units with improved accessibility. We do not plan to provide exclusive use for disabled users on these units. These WPAs will be open to all users but will provide a place for disabled visitors to enjoy wildlife-dependent recreation without having to seek special privileges. Disabled visitors who prefer not to use these enhanced facilities may be given special privileges at other WPAs. These privileges would be granted at the manager's discretion and would be limited to driving on existing trails. No user, disabled or otherwise, will be given permission to drive off of existing trails. Disabled users who

receive special access privileges will be granted special use permits restricting their travel to designated routes on designated WPAs. The permit will include a map identifying allowable routes of travel.

For the purposes of this section, we intend to follow state standards on disabilities for special hunting privileges. The State of Minnesota is reviewing these standards. We expect the revised standards to roughly include people dependent on wheelchairs or supplemental oxygen as a reasonable standard of a disability requiring enhanced opportunities for access. If state standards do not meet our needs, we may develop our own standards in the future.

Operations

Individual WPA Development Plans

At the heart of on-the-ground restoration and management of WPAs is the writing of individual WPA development plans. These plans inventory existing resources and describe plans for wetland and grassland restoration, structure and debris removal, and planned facilities such as parking, fencing, and wildlife observation sites. They are also means for recording management activities to provide a history for future management decisions. As miniature comprehensive conservation plans, they are critical step-down plans to carry out the goals, objectives, and strategies outlined in this comprehensive conservation plan.

However, many WPAs lack development plans. With new technology employing Geographic Information Systems, this planning and recording of management actions has become simpler and faster, as illustrated in Figure 9. Each District is currently setting up a GIS planning system, but the entering of data is hampered by lack of staffing devoted to the effort. In addition, once all plans are done, they will need to be updated on a rotational basis to be useful in the future.

Consistent Use

The visiting public, WPA neighbors, local units of government, and the Minnesota Department of Natural Resources benefit when management and permitted uses on WPAs are consistent from one end of the state to the other. This comprehensive conservation plan provides the opportunity to articulate policies that have been in place for many years but have not always been consistently applied or communicated. New national policies and regulations governing management and use of the Refuge System also prompted a review and fine tuning of what uses will and will not be allowed, and the stipulations all Districts will follow when allowing certain uses.

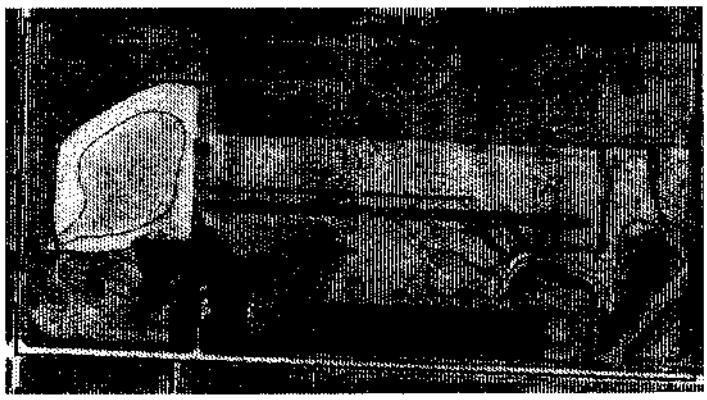
The following is a summary of generally prohibited and permitted uses and activities on WPAs in Minnesota. For each of the permitted activities, the reader is encouraged to review the compatibility determination for each found in Appendix F. Stipulations or operating guidelines in each compatibility determination will be followed by each District when administering the uses.

In addition to these policies, there will be a continuing need to ensure consistency of operations on a variety of management issues such as law enforcement, native seed types and seeding methods, signing, and land acquisition. Goal 10 speaks to this ongoing need.

Figure 9: GIS for WPA Development Planning

GIS used for initial planning:

- Identification and delineation of existing and potential habitats and structures (parking lots, fences, etc.)
- Area/length measurements
- Cost and material calculations
- Generate development schedule



Dovray WPA Development Schedule

5/3/01

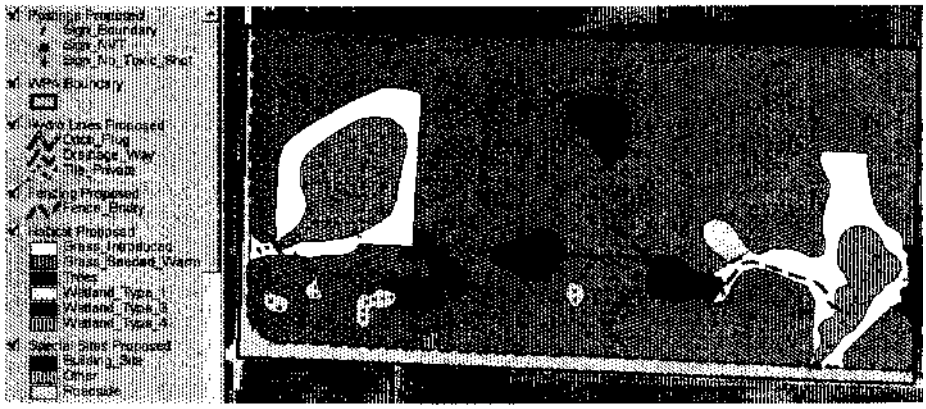
FEATURE	UNIT NAME	DESCRIPTION	PRIORITY	STATUS	DATE	ACRES
Grass_Seeded_Warm						
Grass_Seeded_Warm	Dovray	seed local natives	1	Development Needed	5/1/02	1.1
Grass_Seeded_Warm	Dovray	seed local natives	1	Development Needed	5/1/02	55.9
2						**57.0**
Wetland_Type_1						
Wetland_Type_1	Dovray	tile/ditch plug	1	Development Needed	8/15/01	0.4
Wetland_Type_1	Dovray	tile/ditch plug	1	Development Needed	8/15/01	0.3
Wetland_Type_1	Dovray	tile/ditch plug	1	Development Needed	8/15/01	0.2
Wetland_Type_1	Dovray	tile/ditch plug	1	Development Needed	8/15/01	0.1
Wetland_Type_1	Dovray	remove tile	1	Development Needed	8/15/01	0.1
5						**1.1**
Building_Site						
Building_Site	Dovray	Remove/bury	1	Development Needed	9/30/01	0.5
1						**0.5**
Other						
Other	Dovray	Parking Lot	2	Development Needed	9/15/02	0.1
1						**0.1**

GIS Maps Assist Habitat Restoration and Other Development Activities

- On-site coordination with contractors and field staff.

- GIS used to document restoration and other development accomplishments.

-Development maps become the base map to record future management accomplishments (ie. burning, weed control, etc.)



Public Uses Generally Prohibited

- Off-road vehicle use, including snowmobiles and ATVs
- Camping
- Open fires
- Discharge of firearms except during State hunting seasons
- Use of motorized water craft
- Dog trials
- Horseback riding
- Commercial bait collecting
- Beekeeping

Public Uses Permitted (See Compatibility Determinations in Appendix F)

- Hunting in accordance with State seasons and regulations
- Wildlife observation
- Photography
- Fishing in accordance with State seasons and regulations
- Environmental education
- Interpretation for individuals or groups
- Trapping in accordance with State seasons and regulations
- Berry and nut collecting for personal use
- Limited plant and seed collection for decorative purposes

(Note: these uses include the use of non-motorized means of access including hiking, snowshoeing, cross-country skiing, or where appropriate, bicycling on existing trails)

Generally Permitted Management Activities Done by Others, and Miscellaneous Activities/Programs

(See Compatibility Determinations in Appendix F)

- Haying for grassland management
- Farming for grassland management
- Grazing for grassland management
- Timber or firewood harvest
- Food plots and feeders for resident wildlife
- Wildlife nesting structures
- Archaeological surveys
- Special access for disabled users
- Irrigation travelways across easement wetlands
- Temporary road improvement outside of existing right-of-way
- Special dedications/ceremonies
- Wetland access facilities
- WPA parking facilities
- Local Fire Department Training – Prescribed Burning
- Local Fire Department Training – Burning of Surplus Buildings on New Acquisitions

Other Reoccurring Uses Handled on Case-by-Case Basis

- New or expanded rights-of-way requests
- Major new facilities associated with public uses
- Commercial filming
- Special events
- Animal collecting requests
- Other requests for uses not listed above

Drainage

We often receive requests to maintain, improve, or construct drainage systems onto or across WPAs. The Windom Wetland Management District's drainage policy is included in this document as Appendix O. Briefly, legitimate drainage maintenance will be allowed to the original scope and effect of the drainage system. No new drainage will be allowed.

Chapter 4: Management Direction

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Windom Wetland Management District

This chapter of the Comprehensive Conservation Plan steps down overall guidance to the District through station specific objectives and strategies. The objectives and strategies identify activities that achieve the Plan's goals, the District's purpose and the National Wildlife Refuge System mission (Chapters 1 and 2).

The Windom Wetland Management District was established in 1990 and encompasses 12 southwestern Minnesota counties (Figure). It includes 59 WPAs covering 11,444 acres of fee title lands, 34 wetland/flowage easements covering 1,463 acres, eight Habitat Easements totaling 384 acres and nine FmHA Conservation Easements on land formerly on the inventory of the Farmers Home Administration.

Major Habitat Types of Waterfowl Production Areas in the Windom Wetland Management District (in acres)

Native prairie	402
Other grasslands/farmland	6,357
Forested/brushland	543
Wetland/riverine	4140
Total	11,444

Objectives and Strategies

Wildlife and Habitat

Goal 1: Wildlife

Strive to preserve and maintain diversity and increase the abundance of waterfowl and other key wildlife species in the Northern Tallgrass Prairie Ecosystem. Seek sustainable solutions to the impact of Canada geese on adjacent private croplands. Preserve, restore, and enhance resident wildlife populations where compatible with waterfowl and the preservation of other trust species.

Objective 1.1: Update MAAPE Process. The District will request that Habitat and Population Evaluation Team (HAPET) to review the Multi-agency Approach to Planning and Evaluation (MAAPE) process every 5 years to incorporate monitoring results and reevaluate strategies for increasing waterfowl production within the Districts.

Figure 10: Windom Wetland Management District

Strategy 1.1.1: MAAPE Review. Schedule a MAAPE review for January 2004. RONS Project Nos. 00001 and 00006

Strategy 1.1.2: Waterfowl Partnerships. Recruit two non-traditional organizations to participate in MAAPE process.

Objective 1.2: Alternative Waterfowl Monitoring. The District will develop alternative monitoring techniques by the year 2005 for waterfowl abundance and productivity estimates in areas of Districts that are not well-covered by the 4-square-mile monitoring program. These estimates should be developed in cooperation with the HAPET office since the current 4-square-mile data is used in the mallard model and forms the basis of the MAAPE process.

Strategy 1.2.1: Waterfowl Production Estimates. Explore the development of an annual nest drag program and brood count routes with HAPET by the year 2005, to complement the data collected during the 4-square-mile breeding pair survey.

Strategy 1.2.2: Wildlife Biologist. Additional wildlife biologists, biological technicians, and support funds and equipment will be requested so that monitoring programs can be developed and implemented. RONS Project Nos. 99006, 00010 and 00011

Objective 1.3: Recruitment Rate. The District will strive to increase potential recruitment rate of mallards in an average year from the current level of 0.35 to 0.51 by the year 2015 (based on the Mallard model and the MAAPE process).

Strategy 1.3.1: Upland Nesting Habitat. This increase will occur by converting 118,000 acres of cropland to grassland through a variety of programs and partnerships. Other techniques will also be used such as: grazing programs, establishment of waterway buffer strips, wetland restorations and wetland water level management. RONS Project Nos. 00001, 00002

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Strategy 1.3.2: Nest Success. The District will strive for 50 percent nest success (Mayfield) on nest structures within the District.

Strategy 1.3.3: Nest Structures. The District will assemble and place 200 hen house nesting structures per year starting in 2008 until a total of 2,300 is reached. The District, in partnership with other organizations, will continue to maintain and monitor all existing structures and relocate structures that have not been used for five successive years. RONS Project No. 00042

Strategy 1.3.4: Recruitment Study. Obtain funding to conduct a three year study to determine waterfowl production on WPAs in southwestern Minnesota. RONS Project No. 00012

Objective 1.4: Violations. Each year, the District will inspect all WPA, FmHA Conservation Easement and Habitat Easement for compliance to insure protection of migratory waterfowl and other habitats. Any illegal activity will be responded to immediately and restored as soon as possible.

Strategy 1.4.1: Easement Enforcement. District staff will inspect WPAs during routine field activity throughout the year. Surveillance flights conducted in the fall will be used to inspect easements and WPAs not inspected during routine field activities. RONS Project Nos. 00013, 00043

Objective 1.5: Working With Partners. The District will cooperate with all USDA, Minnesota DNR and any other local agency programs as well as participate as a partner with local conservation groups to increase waterfowl habitat and production.

Strategy 1.5.1: Partner Coordination. Organize a meeting by 2006 with potential partner organizations to identify ways to work cooperatively to improve

wildlife habitat. RONS Project Nos. 00004, 00006, 00008 and 00009.

Objective 1.6: Enforcement. The Districts will prohibit the introduction of wildlife species on WPAs that are not native to the Northern Tallgrass Prairie Ecosystem.

Strategy 1.6.1: Outreach. Inform public about prohibited wildlife species introductions through news releases and other media outlets. RONS Project No. 00031

Objective 1.7: By 2003 develop a Memorandum of Understanding with the Minnesota DNR which clearly articulates the responsibilities of Wetland Districts for the handling of landowner complaints originating from geese on WPA wetlands.

Strategy 1.7.1: Corrective Measures. Where a problem is identified as a responsibility of the Service, we will work with each landowner on a case by case basis and choose a long term solution that will best meet the needs of the affected landowner. RONS Project No. 00028

Goal 2: Habitat

Restore native prairie plant communities of the Northern Tallgrass Prairie Ecosystem using local ecotypes of seed and maintain the vigor of these stands through natural processes. Restore functioning wetland complexes and maintain the cyclic productivity of wetlands. Continue efforts for long-term solutions to the problem of invasive species with increased emphasis on biological control to minimize damage to aquatic and terrestrial communities. Continue efforts to better define the role of each District in assisting private landowners with wetland, upland and riparian restorations.

Objective 2.1: Prairie Restoration. Restore an average of 500 fee title acres each year to native prairie grass and forb species. Begin the restoration process on all new acquisitions within three years of purchase. Seed a diverse mix of predominantly native grasses and forbes using the ecotype recommendations of the Headwaters/Tallgrass Prairie Ecosystem Team. Replicate, to the extent possible, the structure, species composition, and processes of native ecological communities in the Tallgrass Prairie to improve migratory bird habitat and improve existing soil and water quality within respective watersheds. Judiciously use non-native plantings when desirable to meet waterfowl and migratory bird population objectives.

Strategy 2.1.1: Local Origin Seed. By year 2010, develop a local harvest sites for native grass and forb harvest sites on WPAs and easements, which have a combined annual capacity of producing 6,000 pounds of pure live seed. This seed will be used primarily on WPAs to re-establish quality,

diverse upland habitat. When considered appropriate, this seed can also be used on Habitat Easements and Private Lands. RONS Project Nos. 99008, 99009, 00015, 00016

Strategy 2.1.2: Native Prairie Specialist. Hire a Biologist that specializes in native prairie ecology by 2004. Responsible to identify and coordinate the protection, maintenance and restoration of priority sites. RONS Project No. 99008

Strategy 2.1.3: Grassland Management Plan. Develop a grassland management plan by 2005 which identifies priority sites for local origin grass/forb establishment (former cropland), conversion (non-native habitat), and seed harvest. The plan will also outline habitat restoration, preservation and maintenance techniques and strategies. RONS Project No. 99008

Strategy 2.1.4: Techniques. Test and evaluate local origin native plant establishment techniques to improve seed application efficiency, plant establishment, plant diversity and reduce invasive, noxious weed problems. RONS Project No. 99008

Objective 2.2: Grassland Management. Manage all fee and up to 25 percent of the easement grasslands which need management to maintain or improve plant diversity and vigor.

Strategy 2.2.1: Existing Grassland. Seed or interseed 200 acres of existing grassland per year to local origin native grass and forbs. RONS Project Nos. 00015, 00016, 00017

Strategy 2.2.2: Woody Cover Management. Remove woody cover that is invading grassland habitat. Treat 100 acres annually. RONS Project No. 00018

Objective 2.3: Prescribed Burn. Annually plan and conduct prescribed burns to imitate the natural fire process on 5,000 acres to maintain and restore native prairie plant species, improve waterfowl and wildlife utilization, and prepare selected sites for native seed harvest.

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Strategy 2.3.1: Expand Prescribed Fire Season. Imitate the effects of historic fires on native grass/forb plants by expanding the prescribed fire season to include summer and fall burns. RONS Project No. 00021

Strategy 2.3.2: Fire Equipment. By year 2003, increase firefighting equipment to supply two prescribed fire crews. RONS Project Nos. 99011, 00020

Strategy 2.3.3: Fire Staff. By year 2003, increase fire staff to establish two fire crews. RONS Project Nos. 99011, 00019

Objective 2.4: Wildfire Management. Protect human life, property, natural/ cultural resources, real property both within and adjacent to Fish and Wildlife Service administered lands from those fires which start on FWS lands by safely suppressing all wildland fires using strategies and tactics appropriate to safety considerations, values to be protected, management objectives and in accordance with Service Policy.

Strategy 2.4.1: Wildfire Coordination. Establish a stronger working relationship with local fire authorities. Establish detection, initial attack and fire management cooperative agreements with local fire departments. RONS Project No. 00021

Objective 2.5: Wetland Restoration. Restore a combined average of 150 wetlands per year (1,000 acres) on and off District lands to provide migratory birds migration, breeding and nesting habitat.

Strategy 2.5.1: Restoration Staff/Funding. Add Wetland Restoration Biologist, staff and funding by year 2002 to promote and complete restorations both on private and public lands. RONS Project Nos. 99010, 00002, 00004, 00005, 00007, 00022, 00023

Strategy 2.5.2: WPA Wetland Restoration. Restore all drained WPA wetlands, except co-owned, within 2 years of acquisition. RONS Project Nos. 00022, 00023

Strategy 2.5.3: Large Private Wetlands. Allow for restoration of one to two large private wetlands (average of 75-plus acres each) annually by seeking funds and hiring staff to conduct the extensive planning, landowner contacts, coordination with partners, design, permitting and monitoring of construction necessary. RONS Project Nos. 00022, 00023

Objective 2.6: Water Level Management. Draw the water down on 20 percent of the wetlands that have built-in water control structures to increase vegetation and nutrient recycling for the benefit of waterfowl.

Strategy 2.6.1: Water Management Plan. By year 2006, develop a water level management plan for the District. RONS Project No. 00025

Objective 2.7: Monitoring. Inventory hydrological systems in the District as identified in the monitoring plan, including chemical water analysis, water level, water flow and the interaction of federal lands and private lands within the watershed.

Strategy 2.7.1: Annual Assessment. Inspect all water control structures and determine management needs on an annual basis to improve marsh productivity as brood rearing and breeding habitat for migratory birds. RONS Project Nos. 98007, 00003, 00025

Strategy 2.7.2: Effects of Wetlands. Monitor the impact of wetlands on hydrology within various watersheds as identified in the monitoring plan. RONS Project Nos. 98007 and 00025

Strategy 2.7.3: Contaminant Monitoring. Conduct water analysis to monitor changes in contaminants and other key chemicals over time as identified in the monitoring plan. RONS Project Nos. 98007 and 00025

Objective 2.8: Cooperation. Work in partnership with Watershed Boards to identify opportunities for mutually beneficial wetland restoration projects.

Strategy 2.8.1: Watershed Coordination. By the year 2006, meet with each Watershed Board in the District to determine their interest in cooperatively developing a list of mutually beneficial wetland restoration projects. RONS Project No. 98007

Objective 2.9: Research. Encourage and cooperate in research on hydrological systems within the District.

Strategy 2.9.1: Wetland Plant Diversity. By year 2005, contact Southwest State University (Marshall, Minnesota) or South Dakota State University (Brookings, South Dakota) to study the most effective methods of re-establishing a diverse wetland plant community in wetlands previously converted to cropland. RONS Project No. 00024

Objective 2.10: Management Data. By 2008, collect basic hydrological data to assist with the management of wetlands on WPAs and to assist in the strategic planning of future land acquisitions. Data collection will follow the guidance developed in the monitoring plan.

Strategy 2.10.1: Obtain GIS layers which enable the calculation of watersheds for existing or drained wetlands. Use as tool for managing or restoring wetlands. RONS Project No. 98007

Objective 2.11: Hydrologist. By 2006, hire a hydrologist for each District to conduct hydrological monitoring program, analyze the data and present the information to management in a usable form.

Strategy 2.11.1: Hydrologist. Hire a hydrologist and purchase the necessary equipment and supplies to conduct the District Water Management Program. RONS Project No. 00025

Strategy 2.11.2: Coordination. Have annual meetings for hydrologists throughout the Districts to share information, techniques, and results.

Strategy 2.11.3: Data Summary. The hydrologist will collect and summarize hydrological data in an annual report and identify how this data can be incorporated in management decisions for the benefit of waterfowl and other target populations. RONS Project No. 00025

Strategy 2.11.4: Contaminants. Hydrologist will monitor contaminants in the wetlands within the District on a regular basis as outlined in the monitoring plan.

Objective 2.12: Cooperation. By 2008, the Districts will cooperate with state wildlife offices and local organizations to provide winter food sources on documented wintering areas to benefit resident species of wildlife.

Strategy 2.12.1: Coordination. Cooperate with DNR Wildlife Managers and local organizations in providing Special Use Permits for small (1-4 acre) food plots on WPAs where a documented need exists. Practice will be implemented selectively and not promoted for all WPAs across the District. A willing and reliable local organization must commit to accepting all responsibilities concerning the establishment and management of the food plot.

Strategy 2.12.2: Woody Cover. Tree plantings will be limited to indigenous brush species and to sites where they historically occurred.

Objective 2.13: Plant Control. Reduce exotic plants by 2008, including noxious weeds on state and county lists, through an aggressive program including burning, mowing, chemical treatment, hand cropping, and interseeding. Primary targets include purple loosestrife, Canada thistle, and leafy spurge.

Strategy 2.13.1: Biological Control. Continue to promote and emphasize biological control through use of insects and other biological agents. Implement appropriate strategies on all identified WPA sites by 2006. RONS Project Nos. 00018 and 00029

Strategy 2.13.2: Staff. Hire an outreach specialist to work with students, landowners and the general public to

implement control and eradication measures throughout the District. RONS Project No. 00032

Strategy 2.13.3: Habitat Conversion. Identify and convert severe problem weed areas, located in non-native grassland. Develop long-term solution by eliminating noxious weeds and converting area to local origin native prairie grass/forb plants though farming agreements or inter-seeding techniques. RONS Project No. 00029

Strategy 2.13.4: Weed Control. Improve weed control through mechanical and chemical methods on WPAs as necessary. RONS Project No. 00029

Objective 2.14: Minnow and Carp Control. Reduce or eliminate populations of exotic/invasive fish species on shallow prairie wetland communities within the District by 2015. Primary targets include fathead minnows, common carp and buffalo.

Strategy 2.14.1: Conduct a survey to determine the extent of invasive fish species and implement eradication measures as necessary on WPAs within the District. RONS Project No. 00030

Objective 2.15: Grasshopper Control. Work with Minnesota Department of Agriculture to devise an appropriate emergency grasshopper control plan by 2008 so that future infestations are handled effectively and in a way that minimizes or eliminates insecticide use on WPAs.

Strategy 2.15.1: Coordination. Contact Minnesota Department of Agriculture in 2006 to begin planning process.

Objective 2.16: Biological Control. Increase emphasis on biological control for invasive species whenever feasible.

Strategy 2.16.1: Plants. See Strategy 2.1.3.1.

Goal 3: Acquisition

Within current acquisition acreage goals, identify the highest priority acres for acquisition taking into account block size and waterfowl productivity data. These priority areas should drive acquisition efforts whenever possible. Service land acquisition should have no negative impact on net revenues to local government. Understand and communicate the economic effects of federal land ownership on local communities.

Objective 3.1: Evaluating Acquisition Priority. Review and update the current acquisition guidelines by the year 2004. Acquisition strategies for future acquisitions within the Districts will be based on site potential. Consideration should be given to size, quality, key species affected, habitat fragmentation, landscape scale, wetland complexes, potential productivity of restored wetlands, etc.

Strategy 3.1.1: Guidelines. Acquisition guidelines that highlight biological and management factors to be considered when purchasing new lands and reviewed when delineating acquisitions.

Objective 3.2: Goal Acres. Conduct a biological assessment by the year 2006 to determine if current goal acres will be sufficient to reach waterfowl recruitment objectives for the District.

Strategy 3.2.1: Acquisition Planning. Complete a District-wide assessment by 2004 to identify high priority fee and easement acquisitions, which include round-outs and new starts. RONS Project No. 00003

Strategy 3.2.2: Ascertainment Biologist. Hire an Ascertainment Biologist to complete 2B1, inspect potential acquisitions, contact landowners of high priority tracts, complete elevation surveys and provide assistance in the certification process. RONS Project No. 00014

Objective 3.3: Coordination. The District will coordinate with the District Acquisition Office to insure rapid response to willing seller offers that meet the acquisition priorities. An offer will be made to the seller within 6 months of the decision to acquire the tract.

Strategy 3.3.1: Appraisal Request. By 2006 the District staff will request an appraisal from the Acquisition Office within 1 month of the initial land owner contact if interested in acquiring the tract. RONS Project Nos. 00014, 00005

Strategy 3.3.2: Acquisition Offer. The Acquisition Office will make an offer within 6 months of receiving the appraisal request and delineation sheet from the District staff.

Objective 3.4: Acquisition Goals. The District will meet current District goal acres within 15 years by acquiring an average of 1,000 acres in fee title, 200 acres of Wetland Easements and 700 acres of Habitat Easements per year, for waterfowl breeding and use. This objective will be modified as appropriate if the goal acres are modified.

Strategy 3.4.1: Acquisition Referrals. By year 2005, streamline and promote the process of referring potential fee/easement acquisitions to the District by partner organizations.

Strategy 3.4.2: Identify Willing Sellers. Contact landowners of key parcels to establish relationship and inform them of our interest in fee or easement acquisition. RONS Project No. 00014

Objective 3.5: Full Funding. Annually, advocate 100 percent of revenue sharing and a lump sum payment for past underpayment through a trust fund to the counties.

Objective 3.6: Refuge Revenue Sharing. By 2005, conduct a study that would provide the following information to managers so that they can better communicate the issue to the public:

1) A graph of revenue sharing for the last 20 years.

2) A detailed explanation of the impact of federal ownership on school taxes.

3) A detailed description of the trust fund payments to the counties in relation to the revenue sharing shortfall.

4) How much money is needed to make up the Refuge Revenue Sharing payment shortfall prior to 1993?

Strategy 3.6.1: Improve Communications. Prepare a brochure and news release materials by 2005, that provides comprehensive information concerning the Refuge Revenue Sharing Program, the historic shortfall, the discrepancy between local taxes and the social impact of the WPA program (economic, recreational, environmental) to local communities. The brochure would utilize information obtained from Objectives 3.5 and 3.6. RONS Project Nos. 00031 and 00031

Objective 3.7: Economic Impact. By 2006, cooperate with research designed to determine local economic value of Federal land ownership.

Objective 3.8: Hydrological Benefits. By 2010, demonstrate the hydrological benefits of restored wetlands; determine cash value of wetland values.

Objective 3.9: Aesthetic Value. Determine importance of wildlife to people in the Windom community by 2008.

Goal 4: Monitoring

Collect baseline information on plants, fish and wildlife and monitor critical parameters and trends of key species and/or species groups on and around District units. Promote the use of coordinated, standardized, cost effective, and defensible methods for gathering and analyzing habitat and population data. Management decisions will be based on the resulting data.

Objective 4.1: Inventory and Monitoring Workshop: Conduct an inventory and monitoring workshop by 2006 with recognized researchers in the field to identify monitoring needs, approaches, strategies and target species.

Objective 4.2: Inventory and Monitoring Plan. Develop an inventory and monitoring plan by 2006 that will identify census needs and

appropriate techniques as part of a coordinated monitoring program that will be used to evaluate species richness within the Districts by developing species data and accounts on selected sites.

Strategy 4.2.1: Staff. Hire a wildlife biologist to develop an inventory and monitoring plan. Initiate and complete an inventory and monitoring program as outlined in the plan. Hire two Biological Technicians to collect and summarize inventory and monitoring data. RONS Project Nos. 99006, 00010, 00011

Objective 4.3: Geographic Information System. Increase use of GIS technology in monitoring habitat and wildlife (See operations section for details)

Objective 4.4: Good Science. By 2006, increase the use of biological data in the overall management of the Districts by fulfilling the actions identified in the inventory and monitoring plan.

Strategy 4.4.1: Coordination. Have annual meetings for biologists and field personnel to share information, techniques and results of management strategies on target populations.

Strategy 4.4.2: Data Summaries. The biologist should summarize data concerning the impact of management strategies on target species and present to management so decisions can be based on monitoring information.

Objective 4.5: Biological Inventory. As part of the inventory and monitoring plan, inventory the biological resources on the Districts by the year 2010.

Strategy 4.5.1: Staff. Same as Strategy 4.2.1.

Strategy 4.5.2: Expand Inventory. In cooperation with the Minnesota DNR, expand biological inventory process beyond the boundaries of Federal lands.

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Objective 4.6: Breeding Birds. By 2008, conduct regular surveys of breeding grassland and wetland migratory birds. Include information on reproductive success as well as abundance following techniques identified in the inventory and monitoring plan.

Objectives 4.7: Monitoring. By 2015, monitor the levels of external threats to the Waterfowl Production Units such as soil erosion, incoming water

quality, pesticide use, and contaminants as identified in the Inventory and Monitoring Plan.

Strategy 4.7.1: Identify External Threats. Complete a comprehensive assessment of all WPAs to identify external threats to WPA biological diversity and health. RONS Project No. 00026

Goal 5: Endangered Species / Unique Communities

Preserve enhance, and restore rare native northern tallgrass prairie, flora and fauna that are or may become endangered. Where feasible in both ecological and social/economic terms, reintroduce native species on WPAs in cooperation with the Minnesota DNR.

Objective 5.1: Threatened and Endangered Species. By 2010, identify and survey threatened and endangered species within the District looking specifically for species of special interest as listed in Appendix E.

Objective 5.2: Invertebrates. By 2015, conduct regular surveys of invertebrate communities in grassland and wetland communities following the approaches identified in the Inventory and Monitoring Plan.

Objective 5.3: Research. By 2008, cooperate in one research project that will further our understanding about management and habitat manipulations on the District.

Objective 5.4: Partners for Fish and Wildlife. With the Partners for Fish and Wildlife staff in the Regional Office, develop clear guidance for upland and riparian restoration work so each District is managing the program consistently.

Strategy 5.4.1: Private Lands. Identify limiting factors to the Partners for Fish and Wildlife Program and develop strategies to increase its size and improve its effectiveness.

Strategy 5.4.2: Staff and Funding. Hire a Wildlife Biologist to coordinate and increase the District's ability to respond to natural resource technical assistance requests from private landowners. RONS Project No. 00026

Objective 5.5: Inventory and Monitoring. The District will identify the location of endangered and threatened species within the District boundaries through the Inventory and Monitoring Plan. The Districts will obtain baseline data including maps of all federally-listed endangered and threatened species by the year 2010.

Strategy 5.5.1: Staff. Same as 4.2.1.

Strategy 5.5.2: Cooperate with colleges or universities to conduct an inventory, and develop a list of

endangered and threatened species found in the District. Enter location and description information into the District GIS. RONS Project No. 00010

Objective 5.6: Management. By 2015, protect, and enhance populations of endangered, threatened, or special emphasis species indigenous on District lands. Management applications applied to these areas will be tailored to meet species management needs.

Strategy 5.6.1: Priority Species. Ensure WPA management practices are consistent with sound biological practices for populations of endangered, threatened and special emphasis species found on these areas. RONS Project No. 00010

Objective 5.7: Cooperation. The Districts will work with partners and other agencies to develop specific plans for target species occurring within the Districts.

Strategy 5.7.1: Species Inventory. By 2008, identify and locate target species which require special management consideration.

Objective 5.8: Enforcement. The Districts will enforce all Endangered Species and Migratory Bird Treaty Act regulations within the District through increased contacts with hunters, neighbors and visitors.

Strategy 5.8.1: Outreach. Provide information concerning Endangered Species and Migratory Bird Treaty act regulations each year to High Schools and Sportsmen's clubs within the District.

Strategy 5.8.2: Protection Monitoring. Locations of endangered plant species, and areas used by or critical to endangered plant or animal species will be entered into the GIS data base. Maps of these locations will be provided to all District Staff so frequent monitoring can occur.

Objective 5.9: Monitoring. The Districts will obtain baseline data including maps of all federally endangered and threatened species as well as all native prairie tracts, calcareous fens and oak savannah by 2004.

Strategy 5.9.1: Staff. Same as 4.2.1.

Strategy 5.9.2: Coordination. Contact Minnesota DNR and Nature Conservancy to obtain GIS layers of the above by 2003.

Objective 5.10: Cooperation. By 2007, the Districts will identify threatened Northern Tallgrass Prairie unique communities and work through the Tall Grass Prairie Habitat Preservation Area project partners or other agencies and partners to acquire in fee title or

protect through easement where the Small Wetlands Acquisition Program is not appropriate.

Strategy 5.10.1: Protection Planning. All remaining native prairie remnants within the District will be identified by the District Wildlife Biologist by 2005 and strategies for their protection will be developed by 2006. RONS Project No. 00010

Strategy 5.10.2: Staff. Use Acquisition Program to accomplish resource protection though the efforts of an Ascertainment Biologist. RONS Project No. 00014

Objective 5.11: Reintroduction Plan. Identify, evaluate, and prioritize opportunities to reintroduce native species documenting the needs in a plan by 2005.

Strategy 5.11.1: Staff. Hire a Wildlife Biologist by 2003 to coordinate reintroduction efforts with the Minnesota Department of Natural Resources and other partners. RONS Project No. 00027

Objective 5.12: By 2007 begin a reintroduction program to reintroduce one species per year until all goal species identified under Objective 5.11 are reintroduced.

Objective 5.13: Establish Priorities. Develop priority actions to be implemented by the Partners for Fish and Wildlife Program with the strategies to be developed in a joint effort by all districts by 2005.

Strategy 5.13.1: Serve the Public. Reduce response time to requests for assistance in restoring wetland and upland habitats. Promote enrollment of restorations into perpetual easements. RONS Project No. 00026

Goal 6: Public Use / Environmental Education

Provide opportunities for the public to use the WPAs in a way that promotes understanding and appreciation of the Prairie Pothole Region. Promote greater understanding and awareness of the Wetland Management District's programs, goals, and objectives. Advance stewardship and understanding of the Prairie Pothole Region through environmental education, outreach and partnership development.

Objective 6.1: Improved Standards. Each Wetland Management District will strive to meet the National Visitor Service Standards for the Refuge System by the year 2005.

Strategy 6.1.1: Visitor Services Plan. By 2003, develop a comprehensive, District Visitor Services Plan which addresses: outreach; volunteer program partnerships; environmental education; handicap accessi-

bility and wildlife-dependent recreational needs/ opportunities. RONS Project Nos. 98006 and 00033

Strategy 6.1.2: Visitor Contact Station. Develop Visitor Contact Station at District Headquarters on the Wolf Lake WPA. Purpose is to welcome, inform and orient visitors, and provide facilities to conduct a K-12 grade Environmental Education Program. Ensure adequate funding for staff, exhibits, supplies and equipment to meet National Visitor Center Standards. RONS Project Nos. 99015, 00035 and 00036

Strategy 6.1.3: Parking Areas. Address shortage of parking areas on WPAs to enable the public to safely utilize all WPAs and reduce potential collision hazards. RONS Project No. 00034

Objective 6.2: Staff. Each Wetland Management District should have a full time public use specialist by the year 2003.

Strategy 6.2.1: Outdoor Recreation Planner. Hire an Outdoor Recreation Planner by 2004 to develop the Comprehensive District Visitor Services Plan and begin implementation by 2004. RONS Project No. 00032

Objective 6.3: Accessibility. Each Wetland Management District should designate a Waterfowl Production Area in each county that will be handicapped accessible by 2006.

Strategy 6.3.1: Interpretive Facilities. In each county, construct accessible interpretive walking trails, board walks, wildlife observation towers, hunting and photo blinds as well as update public use leaflets. RONS Project No. 00038

Objective 6.4: WPA Maps. Develop maps for each Wetland Management District that can be easily provided upon request to the public by the year 2004.

Strategy 6.4.1: Maps for the Public. Utilize GIS technology to provide accurate, up-to-date WPA maps for public use. Develop “hard copy” and internet accessible county and individual WPA maps. RONS Project No. 00039

Objective 6.5: Outreach Plan. Develop an outreach plan for each District, following the Public Use Plan developed by Fergus Falls Wetland Management District. Address internal (within the Service) and external audiences by the year 2005.

Strategy 6.5.1: See 6.1.1 and 6.1.2.

Objective 6.6: Promote greater understanding of the District program; implement the Public Use Plan for each District by the year 2005.

Objective 6.7: Environmental Education. Provide 2,000 environmental education visits per year on the District by 2005.

Strategy 6.7.1: EE Program. Provide a K-12 grade Environmental Education Program which primarily utilizes the Wolf Lake and Worthington WPAs as outdoor classrooms. RONS Project No. 00037

Operations

Goal 7: Development Plan

Complete Geographic Information System (GIS) based WPA Development Plans for each unit in each District. Provide Districts with GIS to assist with acquisition, restoration, management and protection of public and private lands.

Objective 7.1: Complete Development Planning for all existing WPAs by 2008.

Objective 7.2: By 2006, ensure that newly acquired land receives timely, effective unit planning to meet trust responsibilities within two years of taking possession of area.

Objective 7.3: Each District will have its own computer support staff by 2004.

Strategy 7.3.1: Computer Specialist. Hire computer support specialist by 2004 to assist in maintaining and upgrading office computers and networks. Also coordinate development and utilization of GIS/GPS technology. RONS Project No. 00048

Objective 7.4: Software Development. Develop and initiate use of a GIS customized for Wetland District management in all appropriate Minnesota field stations.

Strategy 7.4.1: Continued GIS Development. Identify, develop and incorporate additional capabilities and new technology to meet expanding field station needs. RONS Project No. 00047

Objective 7.5: Data Entry. Complete entry of WPA and Easement ownership boundaries, habitat, facility and management accomplishment layers for all Districts by 2003.

Objective 7.6: Staff Proficiency. Develop GIS proficiency at each District by 2003. Includes a Computer Administrator with advanced GIS skills and a field staff with a basic level of GIS competency.

Strategy 7.6.1: Computer/GIS Administrator. Hire Computer/GIS Administrator to maintain all computer

systems and has lead role in the use of GIS technology. RONS Project No. 00048

Strategy 7.6.2: Data Entry Technicians. Hire or extend the terms of technicians, for the initial and annual GIS data entry process. RONS Project No. 00049

Strategy 7.6.3: GIS Training. Provide initial and annual training for all management and field staff to utilize GIS technology for planning, documenting and evaluating district field activities. RONS Project No. 00049

Goal 8: Support Staff, Facilities and Equipment

Provide necessary levels of maintenance, technician and administrative support staff to achieve other Wetland Management District goals. Provide all Districts with adequate and safe office, maintenance and equipment storage facilities Acquire adequate equipment and vehicles to achieve other District goals. Maintain District equipment and vehicles at or above Service standards.

Objective 8.1: Fill essential staff positions by 2004, other identified staff positions by 2015.

Strategy 8.1.1: Immediate Staff Needs. The immediate staff needs are discussed in Chapter 5 of this Plan. RONS Project Nos. 00037, 00040 and 00041

Objective 8.2: Identify all buildings that do not meet service standards or needs by 2003.

Objective 8.3: Replace or modify all buildings that do not meet service standards or needs by 2010.

Strategy 8.3.1: Maintenance Facility. Replace existing maintenance facility by 2004, and construct on the Wolf Lake WPA. Facility should include: heated workshop, vehicle parking and cold storage for equipment and grass/forb seed. RONS Project No. 99005

Objective 8.4: Replace Vehicles. Replace all Wetland District vehicles when their mileage reaches normal industry replacement standards (6 years or 60,000).

Strategy 8.4.1: Replacement Requests. Ensure that MMS documents are updated annually to reflect current vehicle needs. MMS Project Nos. 00017, 00118, 92233, 97152

Strategy 8.4.2: Habitat Management Equipment. Replace backlog of worn-out equipment that has exceeded

life expectancy. This equipment is necessary for wetland restoration and upland cover establishment and maintenance. MMS Project Nos. 99432, 00115, 92233, 92234, 92235

Objective 8.5: Other Field Equipment. Acquire and update specialized, non-vehicle equipment such as: trailers, mowers, misc. tools, GPS, laptop computers by 2008.

Strategy 8.5.1: Wetland Restoration/Enforcement. Acquire survey grade GPS unit to facilitate survey, design and inspection of wetland restorations and protection/enforcement of FWS Easements. RONS Project No. 00043

Strategy 8.5.2: Laptop Computers. Acquire and upgrade laptop computers to enable wetland restoration data collection, processing, and design to be completed in the field to improve communications with private landowners. RONS Project No. 00048

Goal 9: Capital Development Funds

Ensure that annual capital development funds are large enough to meet necessary development of new WPA land: Have adequate funds available each year to permit completion of maintenance needs for each Wetland Districts current land base of Waterfowl Production Areas.

Objective 9.1: Development Funds. As requested, educate and provide adequate information to Regional, Washington, departmental and congressional staffs of need for capital improvement funding of an ongoing acquisition program.

Strategy 9.1.1: Development Cost Estimates. Identify costs of adding new lands to O&M budgets.

Strategy 9.1.2: Development Funding. Obtain annual funding for habitat restoration on newly acquired lands including building site demolition, fence removal, well sealing and general cleanup. RONS Project Nos. 99002 and 00044

Strategy 9.1.3: Archeological Surveys. Obtain funding to conduct four cultural resource investigations each year on newly acquired lands to document any sites in need of study or preservation and to permit other habitat development projects to proceed. RONS Project No. 00045

Strategy 9.1.4: Parking Areas. See Strategy 6.1.3.

Objective 9.2: Maintenance Needs. By 2004, develop a current inventory of all maintenance needs, updating it annually.

Objective 9.3: Accomplishments Summary. The Refuge Supervisor will summarize accomplishments combining all districts to demonstrate the work done through previous funding.

Strategy 9.3.1: Utilize District GIS. Develop user-friendly process by 2004 for Refuge Supervisor to summarize WPA development accomplishments entered into District GIS

Objective 9.4: FWS Standards. Bring all station facilities and structures up to FWS Standards by 2010.

Strategy 9.4.1: Boundary Maintenance. Bring all backlogged boundary signing and fencing maintenance needs to Service Standards by 2015. RONS Project No. 00046

Strategy 9.4.2: Trails Maintenance. Bring all backlogged repair of station access trails up to service standards.

Goal 10: Consistency

Develop and apply consistent policies for habitat, public use, and resource protection and ensure frequent coordination among Districts, both in Minnesota and in neighboring states with WPAs (North and South Dakota, Iowa, and Wisconsin).

Objective 10.1: Quarterly coordination meetings for the Districts will be held to discuss common issues and practices. The meetings will include all District managers and District supervisors.

Objective 10.2: Once a year a regional meeting will be held to compare notes with managers in Region 6 and other Wetland Management Districts in Region 3 that are not included in this Comprehensive Conservation Plan.

Chapter 5: Plan Implementation

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Essential Staffing, Mission-Critical Projects and Major Maintenance Needs

The Service relies on two systems to track the needs of the Wetland Management Districts and other units of the National Wildlife Refuge System. These systems are the Refuge Operating Needs System and the Maintenance Management System. Each station has scores of projects in each system, representing a need which is often beyond the realities of funding. However, each station has identified its most critical needs which form a realistic assessment of funding needed to meet many of the goals, objectives, and strategies identified in the CCP. These needs also form the basis for the President's budget request to Congress. These critical needs are listed below in the categories of essential staff, mission-critical projects, and major maintenance projects. A complete listing of projects in the Operating Needs System is found in Appendix G and it represents the long-term needs of the Windom Wetland Management District to operate at optimum levels.

Essential Staffing Needs

Assistant Manager
Assistant Manager
Wildlife Biologist
Biological Technician
Administrative Technician
Visitor Services Specialist

Mission-Critical Projects

Provide Visitor Services with Displays for the New Visitor Center
Wetland Restoration
Native Prairie Habitat Restoration

Major Maintenance Projects

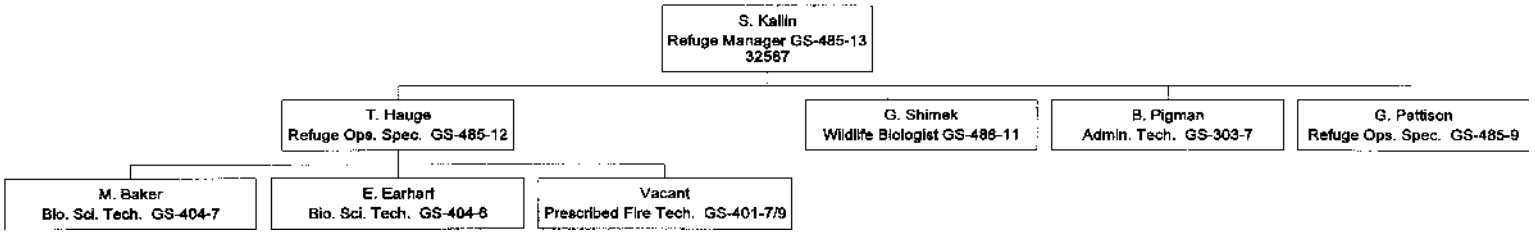
Replace shop Building
Replace WPA Boundary Fences
7 Additional Projects

Total Funding Needs: $2,001,000

Figure 12: Staffing Chart

This Organization Reports to Regional Refuge Supervisor 3 - 33030

Windom WMD



Step-down Management Plans

Existing Step-Down plans that only need a slight modification to implement the direction of the CCP include the following:

Plan	Completion Date by December of:
MAAPE	12/2004
WPA Development Plans	12/2008

The draft list of Step-Down Management Plans necessary to implement the direction of the CCP include:

Plan	Completion Date by December of:
District Acquisition Plan	12/2004
Grassland Management Plan	12/2005
Water Management Plan	12/2008
Inventory and Monitoring Plan	12/2006
Native Wildlife Reintroduction Plan	12/2005
Visitor Services Plan	12/2003
Outreach Plan	12/2005

Partnership Opportunities

We plan to maintain and foster partnerships with national conservation organizations and their local chapters such as Ducks Unlimited, Pheasants Forever, The Nature Conservancy, Audubon Society; with Minnesota conservation organizations and their local chapters such as Minnesota Waterfowl Association, Minnesota Deer Hunters Association; and with local conservation/sportsmen's organizations such as the Heron Lake Restoration Association, the Cottonwood County Game and Fish League, the Jackson County Conservation League and the Brandenburg Foundation.

We will also maintain and expand partnerships with national, state and local government conservation agencies such as the National Park Service, Department of Agriculture's Farm Service Agency and the Natural Resources Conservation Service, the Minnesota Department of Natural Resources, Divisions of Waters, Trails and Waterways, Wildlife, and Fisheries, and the Soil and Water Conservation Districts, and Watershed Districts.

Within the Private Lands Program, the WMD maintains partnerships with approximately eight Soil and Water Conservation Districts, and three Watershed Districts. We will seek to develop partnerships with additional public and private groups as opportunities arise.

Monitoring and Evaluation

Monitoring is critical to successful implementation of this plan. Monitoring is necessary to evaluate the progress toward objectives and to determine if conditions are changing.

Accomplishment of the objectives described in this CCP will be monitored annually by the District Manager's supervisor. Successful performance will be tied to the accomplishment of objectives that are scheduled for that year. The public will be informed about the activities of the District staff through news releases and information on each District's web site.

The techniques and details for monitoring related to specific objectives will be specified in the Inventory and Monitoring Step Down Plan.

Substantial changes are likely to occur within the Service and the local community during the next 15 years. The Plan and its objectives will be examined at least every 5 years to determine if any modifications are necessary to meet the changing conditions.